

**THE CEDAR PROJECT: A COMPARISON OF THE  
SEXUAL VULNERABILITIES OF YOUNG ABORIGINAL  
PEOPLE SURVIVING DRUG USE AND SEX WORK IN  
PRINCE GEORGE AND VANCOUVER, BC.**

by

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## **ABSTRACT**

**Background:** Very little data exists on the overrepresentation of Aboriginal people among HIV and sexually transmitted infection cases in Canada, and how these vulnerabilities interplay with historic trauma, sexual abuse and the utilization of condoms as a protective barrier.

**Purpose:** This analysis explores potential risk factors for inconsistent condom use among the young Aboriginal men and women participating in the Cedar Project at baseline and over time.

**Methods:** The Cedar Project is an ongoing prospective study of Aboriginal young people in Vancouver and Prince George who use injection and non-injection drugs. This analysis includes data from October, 2003 and April 2005. Venous blood samples tested for HIV and HCV antibodies. Multivariable modeling identified risk factors associated with inconsistent condom use in this cohort at baseline. Due to the serial measurements for each study subject, generalized estimating equations (GEE) modeling with logit link was used to accommodate the temporal correlation within the subjects.

**Results:** Of the 292 women and 313 men examined at baseline, prevalence of inconsistent condom use during insertive sex was 59% and 46%, respectively. In multivariable regression, inconsistent condom use among women was significantly associated with ever being enrolled in a drug/alcohol treatment program, and ever being

sexually abused. Among men, inconsistent condom use was significantly associated with having more than 20 lifetime sex partners. Inconsistent condom use was associated with not being single for the entire cohort.

For young women, the predictive risk factors for inconsistent condom use over time included experiencing sexual abuse within the last 6 months. All the young men and women of the Cedar Project who used condoms inconsistently were more likely to not be single, live in Prince George, smoke crack on a daily basis, and have ever had a sexually transmitted infection. Among the participants who used injection drugs, sexual vulnerability was associated with sharing rigs.

**Conclusions:** Sexual health programs for Aboriginal young people, especially those who are vulnerable to drug use, must be made a priority. These interventions must incorporate the reality of gendered differences in the context of multigenerational trauma, including nonconsensual sex.

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## **CO-AUTHORSHIP STATEMENT**

For the manuscript entitled “Sexual vulnerabilities among Aboriginal young people involved in illegal drug use in two Canadian cities”, Negar Chavoshi, Dr. Patricia Spittal, Dr. Chris Richardson and Dr. Matin Schechter designed the analysis. Negar Chavoshi, Dr. Spittal, and Karen Joseph, were responsible for the interpretation of the findings and the literature review. Negar Chavoshi wrote the manuscript. Negar Chavoshi and AKM Moniruzzaman conducted the analyses, contributed to the methods and results section and were involved in revising the manuscript with Dr. Spittal and Karen Joseph. For the manuscript entitled “Increasing Sexual vulnerabilities over time among Aboriginal young people involved in illegal drug use in two Canadian cities”, Negar Chavoshi, Dr. Spittal, Dr. Richardson, and Dr. Schechter were responsible for the design of the analysis. Negar Chavoshi, Dr. Spittal, and Karen Joseph were responsible for the interpretation of the findings and the literature review. Negar Chavoshi wrote the manuscript. Negar Chavoshi and AKM Moniruzzaman conducted the analyses, contributed to the methods and results section and were involved in revising the manuscript with Dr. Spittal and Karen Joseph.

# **CHAPTER 1: CANADA'S HISTORICAL LEGACY OF COLONIZATION**

## **1.1 Thesis overview**

This thesis aims to explore the sexual health vulnerabilities of young Aboriginal people who use drugs. The researcher interprets empirical findings from a cohort driven prospective study of 605 Aboriginal young people. The predictive risk factors for not always using condoms during insertive sex are investigated in order to understand which lifetime, trauma, drug use, and sexual experiences increase the exposure of young Aboriginal people to HIV and sexually transmitted infections.

Chapter 1 situates this research within the historical context of forced assimilation through European colonization. I discuss how the abuse and pain experienced by Aboriginal people as a result of the residential school system were brought back to the communities, culminating in a historic and intergenerational cycle of trauma and abuse. The paradigms that inform this work are then explained and the Cedar Project, Partnership and Cohort within which this research is conducted are introduced. This chapter concludes with a literature review on the sexual vulnerabilities of Aboriginal people in Canada as it relates to this study; the purpose and objectives of this study are also discussed.

Chapter 2 presents the first manuscript, where the predictive risk factors of sexual vulnerability, as defined by inconsistent condom use during insertive sex, are examined for a baseline analysis of the Cedar cohort. The second manuscript is presented in chapter

3, where the sexual vulnerabilities of the young Aboriginal men and women of the Cedar Project are explored over time.

The papers presented in this thesis contribute to empirical health research that incorporates a historical framework to understand the underlying factors responsible for the large sexual health disparities between Aboriginal and non-Aboriginal people living in Canada. These findings are restricted to young Aboriginal people in Vancouver and Prince George, British Columbia who use drugs. Chapter 4 finalizes the thesis with a summary of results, discussions on the limitations of this work, and recommendations for future research.

## **1.2 Introduction: Multigenerational trauma and sexual health vulnerabilities among the Aboriginal people of Canada**

The pathways of health inequalities experienced by Canada's Aboriginal communities are multifaceted and cannot be understood outside the context a history of abuse, discrimination and forced integration (Adelson 2005; Kirmayer et al., 2000; Rojas & Gretton, 2007). These inequalities include but are not limited to, poverty (Frohlich et al., 2006), homelessness (Walker, 2008), suicide (Moniruzzaman, Pearce, Patel, et al., 2008), disease (Walrdram et al., 2006; Craib, Spittal, Wood, et al., 2003) and extreme violence (Ross, 2005). In particular, the legacy of the residential school and child welfare systems have left a stain of disparity and pain among Aboriginal communities, leaving these communities alone, relatively unassisted, and charged to tackle health issues intertwined with systematic injustice (Jiwani, 2006).

Until recently, the impact of the residential school system on family and community had been the topic of quiet discussions within First Nations communities. It was not until the late 1980's that First Nations scholars began to articulate their own experiences in the system providing insight into the substantial impact of assimilation policies as well as the physical and sexual cruelty many children in Canada endured for more than one century (Furniss 1995; Ing, 2000). Following the Constitution Act of 1867, the “care” of Aboriginal communities rested in the hands of the Canadian government, who tried to forcibly “civilize” Aboriginal children through the creation of the residential school system. This church-state partnership aimed to eradicate all ways of native living in order to “Kill the Indian” within the child through the work of Christian missionaries (Milloy, 1999).

Operating between 1874 and 1986, the residential school system forcibly and legally removed over 100,000 children from the care of their families and put them into institutions forged in the name of education, only to deliver decades of injury (Royal Commission of Aboriginal Peoples (RCAP), 1996; Fournier & Crey, 1997). The schools were run on the tenants of strictly regimented discipline reinforced through corporeal punishment (Furniss, 1995). Further, they were run by unqualified teachers who provided no more than a grade three literacy equivalent education for the children. These instructors prohibited and punished any exercise of traditional ways through multiple inhumane tools of obedience. Viewing the Aboriginal children as racially inferior, the residential schools became a playground of predation for adults equipped with complete and unchecked authority (Fournier & Crey, 1997, p.59-60). They eventually transformed

into centres of rampant sexual abuse, malnourishment, disease, humiliation, depression, suicide, and identity crises (RCAP 1996; Hylton, 2002).

Rightfully dubbed “a national crime” (Milloy, 1999, p. 75), the legacy of the residential school system gave way to a subsequent era of human rights violations for Aboriginal people of Canada in a new form: the child welfare system. In 1951, the federal government transferred the delegation of Aboriginal welfare from the federal level to the provincial one. As living conditions on reserves echoed the legacy of the residential school system, social service workers separated thousands of Aboriginal children from what they deemed “unfit” homes and placed them into non-Aboriginal care (Fournier & Crey, 1997, p.30). The justification for dislocating children was based on the perceived unsuitability of poverty struck Aboriginal homes and “negligence” in childcare. In reality, this forcible placement of Aboriginal children with non-Aboriginal families represented a renewed form of a cultural genocide and negative health outcomes (Bagley et al. 1993; Sinclair, 2007).

During the 1950’s and well into the following decades, the proportion of Aboriginal children under governmental care increased from a mere 1% to figures between 30 and 40% (Fournier & Crey, 1997, p. 83). This period of apprehension through the child welfare system was labeled the “60’s Scoop” (Kimelman, 1985). While Aboriginal children comprised only 9% of British Columbia’s child population, they made up almost half of all children in care and 41% of youth in custody (Latimer & Foss, 2004; Ministry of Health, 2006). By 1980, Aboriginal children were six times more likely than the national average to enter foster care (Durst, 2002). Today, 40% of the children in displacement are Aboriginal (Blackstock & Tracome, 2004). In British Columbia,

Aboriginal children are seven times more likely than non-Aboriginal children to be in governmental care and five times more likely to be in youth detention (Provincial Health Officer, 2002, p. 37).

The chilling effects of the residential school system and legislated oppression continue to reverberate in the Aboriginal communities of Canada, especially in the younger generations. In the wake of colonization, cultural and spiritual principles that fostered the sanctity of physical, emotional, mental and spiritual health were dismantled (Royal Commission on Aboriginal Peoples, 1996). The intergenerational effects of abuse and familial fragmentation are evident among Aboriginal families and communities where abuse and substance misuse is widespread (Fournier & Crey, 1997; Hylton, 2002; Walters & Simoni, 2002). The long term psychological and social consequences they have identified are far reaching (Harris, 1999; Walters and Simoni, 2002; Kirmayer et al. 2000). Aboriginal children and grandchildren are struggling with poverty, substance abuse, addiction, suicide, sexual abuse, intimate partner violence, prostitution and overrepresentation of their own children in the child welfare system.

HIV and other infectious diseases are one of the most disastrous outcomes of the historical traumas faced by Aboriginal people (Barlow, 2003). The number of Aboriginal people diagnosed with HIV and Hepatitis C has grown more rapidly in the past decade than among any other single ethnic group in Canada (Public Health Agency of Canada, 2006). Aboriginal young people who use drugs to cope with the effects of intergenerational trauma caused by the residential school and child welfare systems are at particular risk. Therefore, any examination of the high prevalence of life threatening diseases such as HIV/AIDS, HCV, diabetes, and sexually transmitted infections among

Aboriginal people in Canada must be considered through a lens of historical and current trauma transmitted through successive generations (Barlow, 2003; O'Neil, 1986; Walters & Simoni, 2002).

### **1.3 Paradigms of research on Aboriginal health**

In order to address the current health situation of Canada's Aboriginal people, historic trauma and social inequalities must be taken into perspective. Any non-historical perspective will fail to account for the consequences of injustice and European dominance over Aboriginal wellbeing. Aboriginal scholars define multigenerational trauma as the collective emotional and psychological pain and injuries inflicted through this history of colonization spanned over generations (Yellow Horse & Brave Heart, 2004). It is within this paradigm of multigenerational trauma that the causality of historic suffering to present day health is linked. It is within this paradigm that present day suffering is situated.

By instilling shame and hatred into Aboriginal children with regard to their self-worth and cultural identity, the burden of trauma from the residential school and child welfare systems were transferred (Yellow Horse & Brave Heart, 2004). Five generations of Aboriginal children lived through the neglect, self hatred, and degradation of their psyches within the residential schools (Ross, 2006). Placing Aboriginal children in non-Aboriginal homes through the child welfare system further eroded the transmission of cultural tools aimed at cultivating a sense of identity, belonging, and healthy childhood development.

Walters and Simoni (2002) developed an “Indigenist” stress coping model, where they linked the abuse experienced through colonization to alcoholism, addiction and HIV risk. Vernon (2001) positioned the responsibility of HIV infection and disparities of Young Native Americans on the legacy of colonization. She recognized that the Native Americans made vulnerable to AIDS are living socially and economically at the bottom of society. When the first generation of residential school survivors were deprived of safe childhood development, the successive transmission of trauma from one caregiver to the next began. The consequences of cycles of abuse were bolstered by economic inequalities resulting from forced displacement of Aboriginal people from lands, disruption of traditional modes of subsistence and exclusion from the dominant social economy. While Canada’s universal healthcare provides Aboriginal people with resources to enhance their medical health, social power dynamics disregard the challenges of marginalization that act as structural barriers to this opportunity (Jiwani, 2006). Health Canada recognizes that the excessive HIV/AIDS burden among Aboriginal persons and communities in Canada warrants further research and action (Research on HIV/AIDS in Aboriginal People, 1998).

The cumulative effects of economic hardship, difficult childhood experiences, and unresolved grief transmitted through generations, situates the social disparities driving the health of communities within a social ecological framework. It is within this framework that research has linked poor social conditions to HIV infection among visible minorities in the west (Farmer et al. 1996; Vernon, 2001). It is therefore essential to interpret the health vulnerabilities of Aboriginal people in the context of these realities. Walters and Simoni’s (2002) stress coping model introduced mediating factors to cope



with collective and individual trauma. These factors include enculturation, spiritual coping and traditional healing. Research involving Aboriginal persons must be conducted via a community-based approach that adequately addresses Aboriginal culture and concerns related to data handling and confidentiality. Furthermore, this research must respect the special considerations regarding the historical, social and political realities that shape the health experiences of Aboriginal people.

Unfortunately, past use of Aboriginal surveillance data to portray a negative Aboriginal identity has led Aboriginal communities to resist participating in disease surveillance projects (O'Neil et al., 1998). Accordingly, the Tri-Council Policy Statement on the Ethical Conduct For Research Involving Humans make it clear that the obligation to respect human dignity in research involving Aboriginal groups gives rise to ethical duties regarding ethics review, informed consent, confidentiality, conflict of interest and inclusion (Tri-Council Policy Statement on the Ethical Conduct For Research Involving Humans, 1998).

#### **1.4 The Cedar Project**

Aboriginal scholars have emphasized the importance of moving beyond notions of high risk behaviour to explore the historical, relational, and cultural processes that often inform HIV related vulnerability among marginalized peoples (Barlow, 2003; Bajos, 2000; Adelson, 2005; Mill, 1997; Duran & Walters, 2004). Multiple forms of trauma have been identified as life stressors that may contribute to vulnerability (Simoni et al. 2004). These include historical traumas associated with the process of colonizing Indigenous people, such as forced removal of land and of children from their families and

placement in residential schools and the foster care system; multigenerational abuse; discrimination; traumatic life events; and physical and sexual abuse (Fournier & Crey, 1997; Horton, 2006; Walters & Simoni, 2002).

### **Access to health care**

There is widespread awareness among health care providers that Aboriginal people use health services differently than the general population and that a variety of cultural, socioeconomic and historical factors contribute to this reduced use (Waldram et al., 1997; Browne, 2007; Tang & Browne, 2008). For many British Columbians, HIV has become a long-term manageable disease; however, while deaths due to AIDS are steadily declining among non-Aboriginal people, they are increasing considerably among Aboriginal people (Office of the Provincial Health Officer, 2001). Data from the BC HIV/AIDS Drug Treatment Program, that distributes antiretroviral medication province-wide to all eligible persons with HIV, indicates approximately 10% (226 of 2,096 surveyed) of persons accessing antiretroviral care are of Aboriginal descent (Miller et al. 2002). A recent analysis of data from the treatment registry shows a significant under use of HIV/AIDS related health services by Aboriginal people who inject illicit drugs. Specifically, between 1996 and 2003, the rate of antiretroviral drug use by these individuals compared to their non-Aboriginal counterparts was only 29% versus 54% ( $p=0.023$ ) (Wood et al. 2005). Low uptake of HIV treatment has also been documented for Aboriginal people in Western Australia, where researchers demonstrated success in HIV infection treatment through the provision of psychosocial and welfare support, and education of Aboriginal health workers (Hamrosi et al., 2006). Of note, among HIV

infected persons in BC who died between 1995 and 2001, one third of deaths occurred among persons who had never received any antiretroviral therapy (Wood et al., 2003). Aboriginal ethnicity, female sex, and poverty were all associated with lack of HIV treatment (Craib, Spittal, Medd, et al. 2005). Due to the lack of specialized services and resources, this is likely to be even more pronounced in rural and Northern BC. Indeed, young Aboriginal people who use drugs in Prince George experience more difficulties accessing or utilizing harm reduction services compared to participants in Vancouver (Craib, Spittal, Medd et al., 2005). We know that Aboriginal people treated with triple combination antiretroviral therapy are as likely to respond to therapy as non-Aboriginal people (Miller, Spittal, Wood et al., 2006). However, Aboriginal patients are more likely to receive double versus triple combination therapy, are less adherent in the first year of therapy and have access to physicians who are less experienced with treating HIV (Miller, Spittal, Wood, et al., 2006). Interventions are clearly needed to improve access to healthcare services for preventing and managing HIV infection in Aboriginal people.

### **The establishment of the Cedar Project**

Factors that explain elevated risk and transmission of infectious diseases among young Aboriginal people who use illicit drugs are not well understood. Much of the current knowledge is relevant to only those youth residing in large city centres such as Vancouver's Downtown Eastside. While the situation in Vancouver's downtown eastside is considered somewhat unique, evidence now suggests that widespread transmission of infectious diseases is occurring throughout the province. Concerns over the paucity of available data, particularly in rural areas, and the potential for an explosion of infections

in other areas of the province similar to those reported in the mid-nineties in Vancouver's Downtown Eastside (Fournier, 2004) in 2003 prompted the initiation of the Cedar Project, a three city cohort study to address the specific HIV related vulnerabilities of young Aboriginal people who use non-injection and/or injection drugs. The Cedar Project is located in Prince George, a forestry and mining town in the northern interior of British Columbia (BC), Vancouver's downtown eastside, and more recently Kamloops, a forestry and tourism municipality in south-central BC. Since the inception of the study, Aboriginal collaborators and investigators, collectively known as the Cedar Project Partnership, have provided oversight to both the research process and knowledge translation initiatives. To our knowledge, this is the only cohort of its kind in North America. The initial objectives of the Cedar Project were to monitor prevalence and incidence of infectious diseases among young Aboriginal people who use non injection and injection drugs in three cities; to identify risk factors associated with HIV and HCV infection and transition into injection drug use; to assess the impact of mobility on risk behaviour and illicit drug use; and to assess access to preventive and treatment services for young Aboriginal people in the three settings.

### **The Cedar Project Study**

The Cedar Project is an observational study of young Aboriginal people who use drugs and reside in Vancouver's downtown east side, Prince George and Kamloops. Eligibility criteria include being between the age of 14 and 30, provision of informed consent, self identification as having Aboriginal ancestry, and reporting smoking (in the last week) or injecting drugs (in the last month) including crystal methamphetamine,

opiates, crack or cocaine at least once in the month before enrolment. Study participants complete an enrolment visit as well as follow-up visits every six months. At each study visit, participants complete detailed questionnaires administered by trained Aboriginal interviewers. Data regarding demographic and behavioural variables are obtained (quantitative and qualitative), and subjects provide a venous blood sample for HIV and HCV antibody testing, and specimen storage.

The Cedar Project has been funded by the Institute of Aboriginal People's Health and the Institute of Infection and Immunity, and we were recently awarded a knowledge and dissemination grant from the Institute for Aboriginal People's Health. The key objectives of the Cedar Project study are:

- O1. To monitor the prevalence and incidence of HIV and HCV infection among young Aboriginal people who use drugs residing in Vancouver, Prince George and Kamloops, and to evaluate risk factors and protective factors (including addiction treatment and access to cultural supports).
- O2. To analyze the relationships between trauma, resilience and risk behaviour among Cedar participants, in order to inform holistic approaches to addiction treatment and HIV prevention programming for young Aboriginal people.
- O3. To evaluate the natural history of injection drug use from initiation to cessation for the purposes of developing culturally-safe injection prevention programs from youth-based perspectives.
- O4. To determine HIV treatment eligibility among HIV-infected young Aboriginal people who use drugs, to identify barriers and facilitators associated with

access and utilization of HIV treatment and to pilot a Case Management intervention aimed at increasing utilization of HIV treatment among treatment-eligible cohort participants.

As previously mentioned, an Aboriginal Partnership governs the Cedar Project. The Partnership includes: Carrier Sekani Child and Family Services, Splat's in-Secwepemc First Nation, Healing Our Spirit, Positive Living North, Central Interior Native Health Society, Prince George Native Friendship Centre, Q'wemtsin Health Society, Red Road HIV/AIDS Network and Vancouver Native Health Society. Aboriginal Partners and Investigators ensure that the principals of OCAP (Ownership, Control, Access and Possession) are respected. Guiding principles of the Cedar Project Partnership include the meaningful participation of young people in the design and implementation of health programming, honouring the stories of Cedar Project participants, acknowledging the role of the residential school and child welfare systems in health outcomes among Aboriginal young people, and returning knowledge gained from the study to Aboriginal communities.

### **Cohort findings**

We have found that HIV and HCV infection is occurring at a disproportionately high rate in this cohort and that transition from non-injecting drug use to injection drug use is occurring rapidly. It is particularly concerning that our data show that less than 20% of Cedar participants are accessing alcohol or drug treatment programs and very few of those offered antiretroviral medication self-report that they are taking their drugs. It is concerning that 48% of Cedar Project participants reported that they had experienced

sexual abuse at least once in their lifetime (Pearce, Christian, Patterson et al., 2008), 64% reported having been taken from their biological parents (Pearce, Christian, Patel et al., 2008), 37% had ever attempted suicide (Moniruzzaman et al., 2007), 71% had ever been involved in sex work (Mehrabadi et al., 2008), and 61% had ever been incarcerated (Dunnet-Holzer et al., 2008).

For Cedar Project participants, the rate of transition to injection drug use has been alarming. As of July 2007, transition to injection drug use had occurred in 39 participants, for a rate of 11.5/100 person years. This rate is much higher than previously identified among young people living on the streets of Montreal (8.2/100 person years) (Roy, 2003). In univariable analysis, transition to IDU was associated with gender, involvement in survival sex work in last six months, ever having had a sexually transmitted infection, and using drugs with sex work clients in the previous six months. In multivariable analysis, survival sex within the previous six months independently predicted transition to injection drug use (Moniruzzaman, Patel, Christian et al. 2008). Further, the rapid increase of crystal methamphetamine use among Cedar project participants is gravely concerning (Pearce, Moniruzzaman, Patterson et al., 2008; Moniruzzaman, Pearce, Patterson et al., 2008). As of July 2007, 62 participants initiated using methamphetamine for an incidence rate of 17.7/100 person-years (Moniruzzaman, Pearce, Patterson et al., 2008).

### **Vulnerability, trauma and resiliency**

The Cedar Project Partnership has consistently reminded us that despite over 200 years of legislative horror, many traditional mechanisms of healing still exist and are

currently used in communities (Christian & Spittal, 2008). Indeed, Aboriginal scholars have identified specific protective factors to facilitate stress coping (Simoni et al., 2004; Walters & Simoni, 2004; Hamrosi et al., 2006; Stone et al., 2006; Office of the Provincial Health Officer, 2001). They include using collective strengths, gaining strengths through spirituality, cultivating cultural identity, using personal/individual aspects of strengths, and making positive transformations in culturally meaningful ways (Iwasaki & Bartlett, 2006; Newcomb & Felix-Ortiz, 1992; Goudreau, et al., 2008; Wexler & Goodwin, 2006). Spiritual methods of coping, with a specific focus on the mind, the body, the emotion and the spirit, are often associated with adjustment to stressor events as well as physical and mental health status, and intrinsic benefits directly associated with improved health (Office of the Provincial Health Officer, 2001; Tang & Browne, 2008; Moon et al., 2001). Most resiliency researchers agree that resilience is more than an individual set of characteristics; it includes the structures around the individual, the services the individual receives, and the way health knowledge is generated, all of which combine with characteristics of individuals that allow them to overcome the adversity they face and chart pathways to well-being (Moon et al., 2000; Boyden & Mann, 2005). Indeed, it must be acknowledged that structural barriers such as inequitable access to healthcare services must be addressed to enable young people to overcome previous adverse circumstances (Blackstock & Tracome, 2005). Aboriginal people can and do heal from traumatic exposure, and there are multiple examples of the integration of traditional health practices and Western approaches for spiritual and physical healing (Walters et al. 2002; Buchwald et al., 2000; Marbella et al., 1998). The Cedar Project has demonstrated that many Aboriginal young people who use drugs have faced a plethora of adverse life events



including sexual abuse, foster care, sex-work, homelessness, attempted suicide, and HCV/HIV infection. There is much opportunity to learn from the perspectives of young people about what it is that they need to foster resilience and to protect themselves from the consequences of historical trauma.

## **1.5 Literature review**

Aboriginal leaders, communities and service providers are highly concerned about the increasing levels of HIV/AIDS and sexually transmitted infections (STIs) among Aboriginal young people. The health of any population is the product “of a complex web of physiological, psychological, spiritual, historical, sociological, cultural, economic and environmental factors” (Waldram et al., 1995, p. 3). The cumulative effects of economic hardship, unhealthy childhood experiences, and unresolved grief transmitted through generations, situates the social disparities driving the health of communities within a social ecological framework. It is within this framework that research has linked poor social conditions to HIV infection among visible minorities in the west (Farmer et al. 1996; Vernon, 2001). Therefore, any research among Aboriginal communities must respect the special considerations regarding the historical, social and political conditions that shape the health experiences of Aboriginal people. Discussing the health vulnerabilities of Aboriginal young people must be informed by the legacies of colonization; which includes forced removal from traditional lands, economic and social deprivation, cultural genocide and consequences of the residential school and child welfare systems (Red Road HIV/AIDS Network, 2006; Simoni et al. 2004; Wesley-Esquimaux & Smolewski, 2004).

## **Colonization, historic and ongoing trauma, and sexual health**

Following the Constitution Act of 1867, the “care” of Aboriginal communities fell into the hands of the Canadian government. The forced “civilization” of Aboriginal children resulted in the creation of the residential school system; a church-state partnership formed to eradicate all ways of native living (Milloy, 1999). Operating between 1874 and 1986, the system removed over 100,000 children from the care of their families to institutions that delivered decades of injury (Royal Commission of Aboriginal Peoples (RCAP), 1996; Fournier & Crey, 1997). The goal of the schools was to “Kill the Indian” within the child (Milloy, 1999, p. xv); but how can the nature of a child be killed without killing its spirit?

Certainly, sexual abuse is one of the most disastrous corollaries of historical trauma among Aboriginal people. Most disturbingly, the pervasive sexual abuse committed by the figures of religious authority in the residential schools who preached chastity, abstinence, heterosexuality and monogamy, left many children utterly confused and traumatized with regard to notions of healthy sexual development (Fournier & Crey, 1997, p.129; Milloy, 1999 p 296.). There have been estimates that sexual abuse was inflicted upon every single residential school student (Milloy, 1999, p. 198). The sexual abuse within the schools was a systemic tool to degrade the psyche of Aboriginal children, demeaning the Aboriginal identity on the whole (Law Commission of Canada, 2000). The astonishing number of survivors who disclosed their experiences describe the abuse from fondling, to rape and sodomy (Haig-Brown, 1993).

These representatives of “god” who continually exploited the children instilled a trauma that followed the children into their communities, and successive generations. The

combination of total adult control over children, the infliction of abuse as a tool of child rearing, and the absence of mirrored familial kinships has rendered many residential school survivors ill equipped with essential parenting skills (Fournier & Crey, 1997, p.63). Generations of former students were left to bring home the devastating burdens of unresolved guilt, shame, and anger into their family units and communities, recreating a new cycle of inescapable abuse and trauma (Barton et al., 2005; Hylton, 2002; Simoni, Sehgal, & Walters, 2004; Strickland et al., 2006; Walters & Simoni, 2002; Wesley-Esquimaux & Smolewski, 2004).

The root cause of sexual abuse among Aboriginal communities can be traced to the destruction of traditional culture by forced assimilation (Milloy, 1999, p 299). In the residential schools, traditional values and cultural norms regarding the roles of men and women and sexuality were undermined (Hylton 2006; Barlow, 2003). In the aftermath of European colonization, Aboriginal cultural principles that fostered a sacredness of sexuality were dismantled, impacting preventative values and tradition (Chester et al., 1994). Ongoing multigenerational and intergenerational trauma within nuclear and extended families has left Aboriginal communities to experience rates of sexual abuse “like a disease ripping through our communities” (Grand Chief Edward John, 1992, from Milloy, 1999, p. 295). A 1991 Indian and Inuit Nurses of Canada survey reported 50% of male and 80% of female children in the Northwest Territories were sexually molested before the age of 8 (Dumont-Smith & Sioui-Labelle, 1991). The Cariboo Tribal Council (1992) interviewed a randomly chosen sample of band members and approximated the prevalence of sexual abuse to range between 48% and 70% in their sample. A 2006 study on young people surviving life on the street in British Columbia, of which 54%

were Aboriginal, found 39% of the young people were survivors of sexual abuse (Provincial Health Officer, 2009). The Métis Nation British Columbia Provincial Survey of 2006 reported 21% of households to have experienced some form of sexual abuse. Disturbingly, 67% of the young women, and 30% of the young men in the Cedar Project have disclosed experiencing sexual abuse in their lifetime.

Sexual abuse, especially during childhood, has detrimental short and long term consequences for the individual. Most survivors can never fully develop healthy notions of sexuality and may have intense fear of sex, experience flashbacks during sex, have difficulty performing sexually, engage in compulsive sex and sexual promiscuity (Beitchman et al., 1992; Browne and Finkelhor, 1986; Courtois, 1988; Maltz & Holman, 1987). Victims of sexual abuse are also more likely to be re-victimized later in life and to suffer from low self esteem and a sense of powerlessness during sex (Beitchman et al. 1992). Many victims disassociate from their bodies during sex, and become passive recipients with little control over the dynamics of the sexual encounter (Harris, 1999; Briere & Elliot, 1994). As such, deciding or negotiating to use a condom during sex, which may be traumatic even when consensual, may not be realistic.

Dealing with disclosure of the sexual abuse among Aboriginal people is complicated, as children are taught to respect and count on family and community members and can often be shunned for pointing any fingers thereby eliminating sources of social and communal support. Sexual abuse is made further traumatizing when the victim is near the offender, either living within the same small community or when the offender is a family member. Such realities leave many Aboriginal children to blame themselves and turn to other modes of coping. The stressful lifetime experiences of many

young Aboriginal people, which are bolstered by the high prevalence of childhood sexual abuse, elicits the pain-numbing effects of drug use to cope with the loss of self worth (Walters & Simoni, 2002). The established literature has consistently linked sexual abuse for increased risk of HIV infection (Cunningham et al., 1994; M. Miller, 1999; Zierler et al., 1991; (Barlow, 2003; Devries et al. 2008). Cedar Project participants who reported a history of sexual abuse were significantly more likely to be HIV positive (Spittal et al. 2007), and more likely to engage in sex work (Mehrabadi et al. 2008). Pearce, Christian, Patterson et al. (2008) reported that Cedar participants who had been sexually abused were more likely to have been on the streets for more than three nights, indulged in self-harm, ideated and attempted suicide, been diagnosed with mental illness, have over 20 lifetime sexual partners, been involved in survival sex work and have ever overdosed. The same study also demonstrated that only a small proportion of young women with a history of sexual abuse were likely to report condom use.

When examining the topic of sexual health within the lens of a historical and ongoing trauma that has directly shaped the sexual development and health practices of young people who are vulnerable to STIs, inevitable questions arise: how can children who have been subjected to the tremendous pain of abuse, trauma, suicide, drug use and social marginalization be expected to consistently protect themselves during sex? Is it meaningful to hand out a condom to each young person and expect them to be “safe”, when safety is generally an absent reality in their lives? Indeed, the vulnerability of Aboriginal youth to unplanned pregnancy and sexually transmitted infections such as HIV/AIDS have been well documented at the federal level (Health Canada, 2001).

## **HIV/AIDS among Aboriginal people in Canada**

The Public Health Agency of Canada's 2006 surveillance data estimates that Aboriginal people comprise approximately 7.5% of all prevalent HIV infections, while only constituting 3.3% of the Canadian population. Aboriginal people in Canada are also 2.8 times more likely to be newly infected with HIV compared to non-Aboriginal people. Aboriginal young people are also disproportionately being infected with HIV (Public Health Agency of Canada, 2007). Between 1998 and 2006, Aboriginal people aged 20-29 contributed to 28% of positive HIV tests among Aboriginal people, where only 20% of non-Aboriginal cases fell within that age category (Public Health Agency of Canada, 2007). From 1998-2006 surveillance data, the main HIV exposure routes for Aboriginal people included intravenous drug use (IDU; 59% versus the 25% of HIV infection source attributed to IDU among non-Aboriginal people), heterosexual transmission (29% versus 32%), and MSM (men who have sex with men) transmissions (7% versus 40%). In provinces where ethnicity is reportable, the Aboriginal representation among AIDS cases in Canada has risen from 2% in 1998, to 24% in 2006. (Public Health Agency of Canada, 2007)

HIV infection among Aboriginal people in British Columbia is even more exaggerated, where HIV infection rate is estimated to be 5 times higher than that of the provincial population (Fournier, 2004). Miller et al.'s 2006 study among 13 to 24 year old young people who use injection drugs in Vancouver reported Aboriginal participants are seroconverting to HIV at more than twice the rate of non-Aboriginal participants. In the Cedar cohort of young Aboriginal people who use illicit drugs, the prevalence of HIV is 9% overall and 12% when restricted to participants who inject drugs. As of July 2007,

21 Cedar participants seroconverted to HIV, 14 of which were people who used injection drugs. These numbers lead to alarming incident rates higher than that of South African men, where almost 6 million people live with AIDS (Shisana et al. 2008; UNAIDS, 2008).

### **Sexually transmitted infections among Aboriginal people in Canada**

Researchers have only recently begun to highlight the dearth of information pertaining to STI risks specific to Aboriginal people in Canada (De et al. 2007; Law et al. 2008); and shockingly, there are no studies in Canada that address the relationship between untreated STIs and concomitant HIV infection. STIs may play a role in increasing both susceptibility to HIV and the infectiousness of the virus (Galvin & Cohen, 2004). The presence of untreated infections that lead to genital ulcers particularly increase risk for contracting HIV (Centers for Disease Control and Prevention, 1998) In populations that have STI control, a significant reduction of HIV incidence has been noted (Grosskurth et al. 1995). STI management on an individual level has been identified to play an important role in reducing HIV transmission (Gray et al. 1999; Galvin & Cohen, 2004; Fleming & Wasserheit, 1999) and infectiousness (Ghys et al., 1997).

Statistics Canada (2003) reports Aboriginal young people to be 2.5 times more likely to have an STI (Rotermann 2005) and STIs are highest in the 15-24 age category (Steenbeck et al. 2006). Steenbeck et al. (2009) screened 181 female Aboriginal participants in a Canadian Arctic community for chlamydia in a cross-sectional survey and detected a baseline prevalence of 11.6% in comparison to the 2.7% that the

researchers found reported in 2000. Wylie and Jolly (2001) conducted a sexual network analysis to study transmission patterns of chlamydia and gonorrhea in Manitoba, Canada and found existing geographic bridges in many Aboriginal communities continually facilitate the entrance of STIs in even the most geographically isolated areas.

Despite these alarming rates, there are very few studies that address the prevalence and incidence of STIs among vulnerable Aboriginal populations. The majority of available studies are cross-sectional, do not follow a cohort prospectively, do not provide any background information on the traumatic lifetime experiences of at-risk people, and do not focus specifically on Aboriginal people. What we do know is that among outbreak investigations and other national surveillance literature, Aboriginal people are disproportionately represented among STI cases. An outbreak investigation of *Neisseria gonorrhoeae* in Northern Alberta found 96% of cases to consist of Aboriginal people (De et al. 2003); an examination of syphilis rates in British Columbia from 1995-2005 reported that Aboriginal people were 2.4 times more likely to be infected (Ogilvie et al. 2009); a cross-sectional study of street youth between the ages of 15–24 years in seven large urban centers across Canada demonstrated a 14% prevalence rate of chlamydia in Aboriginal young people compared to a 7% rate in non-Aboriginal young people (Shields et al. 2004); a study on predictors of gonorrhea reinfection in Alberta reported that Aboriginal people were 2.6 times more likely to become reinfected (De et al. 2007); and the Public Health Agency of Canada's (2006) routinely collected surveillance data in Alberta has demonstrated Aboriginal identity to be a significant predictor for likelihood of have an STI. Health Canada (2001) reports chlamydia and gonorrhea rates in the Nunavut and Northwest Territories to be ten times higher than the



national average. In 1997, the Nunavik of Quebec area reported that compared to provincial incidence rates, Aboriginal people were 31 times more likely to be newly infected with gonorrhea (Parent & Alary, 1999).

### **Condom use among Aboriginal people**

Inconsistent condom use and STIs are markers for sexual vulnerability and enhance the opportunities for HIV infection; (Weller & Davis, 2005) and it is therefore important to examine the few studies that have explored condom use among Aboriginal people in Canada. One pilot study on a female condom project in two British Columbian Aboriginal communities reported that 40% of participants were using male condoms while 95% were engaged in vaginal sex. Only 6% had ever used the female condom, but 75% had heard of it (Marsden & Newmann, 2001). Rotermaann (2005) examined reported condom use among young people from Statistics Canada survey data and found the odds of not using condoms among Aboriginal males to be twice as high as their non-Aboriginal counterparts.

Calzavara et al. (1998) surveyed 658 Aboriginal men and women living in 11 Ontario reserve communities. Of 400 individuals who reported having sex in the previous 12 months, 8% reported always, 31% sometimes, and 61% never using condoms. 40% of males reported having more than one sex partner in the past year compared to only 18% of females. Myers et al.'s 1999 study extended the findings of Calzavara et al. (1998) among Aboriginal people living on reserve in Ontario demonstrated that 31% of males and 17% of females sometimes used a condom, while 42% of males and 51% of females reported no condom use over the past year.

Hogg et al.'s (2005) population-based analysis of Aboriginal men and women in British Columbia from 1980 to 2001 reported that among men and women, condoms were generally not used with regular partners, 50% of the time with casual partners, and 80% of the time with clients. Among female sex trade workers, 82% reported using condoms during vaginal intercourse. Among men who reported having had sex with other men, condoms were used during 71% of anal intercourse. Heath et al. (1999) conducted a prospective study of gay men in Greater Vancouver and discovered 23% of Aboriginal participants accepted increased payment for having sex without a condom with a client whereas only 9% of non-Aboriginal men were found to do so.

Devries et al. (2008) conducted a cross sectional secondary analysis of the 2003 British Columbia Adolescent Health Survey of students in grades 7 to 12, where approximately 2,500 students were Aboriginal young people. In the study, 21% of males and 41% of females reported inconsistent condom use during their last incident of sexual intercourse. Among females and males, 40% and 10% respectively reported having been sexually abused. Approximately 35% of both genders reported being under the influence of substances during their last sexual encounter. Factors associated with not using condoms during sex among females included living on reserve, learning about culture from the community and using other methods of contraception. Among males, sexual risk predictors included having a history of sexual abuse and using alternate forms of contraception.

Larkin et al. (2007) interviewed Aboriginal young people in rural Ontario schools and demonstrated a direct link between poverty and condom use. In their study, the majority of Aboriginal youth engaged in sexual activity at younger ages, but less than

20% of them reported consistent condom use. The participants mentioned difficulties in negotiating condom use, while young women felt that after knowing someone for so long, condoms became unnecessary. Shercliffe et al. (2007) surveyed 68 young Aboriginal people recruited through community agencies in Regina, and revealed that only 50% of young women used condoms in their last sexual encounter compared to 70% of the young men. In their study, young women reported significantly less knowledge surrounding sexual health. Being assertive during sex was positively linear with condom use within this cohort. Cole (2003) surveyed Nunavut youth and found 10% of males and 20% of females report never using condoms. One sexual health study among urban Aboriginal youth in Ontario reported that just over half of the 38% of sexually active youth who reporting using some form of contraception used condoms, indicating that that the majority of sexually active young people were at risk of contracting an STI (Ontario Federation of Indian Friendship Centres, 2002).

In the era of HIV, and in the context of an epidemic explosion, only these few studies that have looked into condom use as protective barriers among Aboriginal people in Canada. Even still, the majority of these studies are either not prospective, do not incorporate historical perspectives that have impacted sexual vulnerability, are not all exclusive to Aboriginal people, or cannot be applied to vulnerable Aboriginal populations such as people who use injection drugs. Australian and American researchers have approached the vulnerability to HIV/AIDS and STIs much more aggressively (Anderson, 2003; Blum et al., 1992; Hellerstadt et al., 2006; Mitchell et al., 2005; Simoni et al., 2004; Baldwin et al., 2000; Stevens et al., 2000; Fenaughty et al., 1998; Mitchell et al. 2002; Larkins et al. 2007; Willis. 2003; Smith et al. 1999; Stark and Hope, 2007; Roberts and

Cahill, 1997; Morrison-Beady et al. 2001; Travers et al. 2007). This brings the need for cohort driven research specific to Aboriginal people, which provide socio-historical explorations of sexual vulnerability, to the forefront of HIV/AIDS research in Canada.

### **Sexual vulnerabilities and gendered differences among Aboriginal people**

STIs are a leading cause of morbidity among Aboriginal women in Canada. Aboriginal women face the “multiple jeopardy” of race, class and gender as they experience lower health status compared to non-Aboriginal women within the same age categories (Simoni et al., 2004; Healey et al. 2001). Aboriginal women comprise 48% (risen from 12% from before 1995) of all Aboriginal HIV positive test reports from 1998 to 2006. Among the non-Aboriginal population, women comprise only 21% of the new HIV positive cases. The main mode of transmission of HIV infection for Aboriginal women in Canada was intravenous drug use (62% vs. 32% for men), followed by heterosexual transmission (35% vs. 14% for men) (Public Health Agency of Canada, 2007).

As majority of sexually transmitted diseases are identified during surveillance rather than symptoms, there are concerns for the number of indigenous women who are not protected against, or being treated for many life threatening yet curable diseases. Young women are at increased susceptibility for STIs due to their immature cervixes (Young et al., 1997), which is concerning as Aboriginal girls become sexually active at younger ages on average compared to non-Aboriginal girls (Larkin et al. 2007). Aboriginal women are more likely to experience health consequences of chlamydial infection such as infertility, ectopic pregnancy, and pelvic inflammatory disease

(Calzavara et al. 1998). In a retrospective study of premature delivery rates in the Baffin region of Canada, 95% of cases were Inuit mothers (Muggah et al. 2003). A cross-sectional study was conducted on the pap-screened populations in 19 communities of Nunavut reported a 26% prevalence of HPV in a region where cervical cancer makes up almost a third of cancer types on this region (Healey et al. 2001). Yet, Kildea et al.'s 2000 cross sectional analysis of 342 women in a remote Aboriginal community in Northwest Territories investigating reproductive health did not find any women who used condoms as a form of contraception.

Craib et al. (2003) found a reduction in HIV infection risk among female Cedar participants who injected drugs and reported using condoms with their regular sexual partners. However, the researchers cautioned that most sexual health promotion programs designed for women focus on consensual sexual encounters and do not address the complexities of the psychological effects of sexual abuse on women's abilities to negotiate sexual preferences. The sexual vulnerabilities of Aboriginal women must be understood by considering the power dynamics of gender, condom use and sexual health. Compared to the non-Aboriginal population, Aboriginal girls and women in British Columbia are subject to more violent crimes, higher rates of sexual and physical violence, and murder (Macdonald, 2005; The McCreary Centre Society, 2005). In Canada, Aboriginal women are more likely than Aboriginal men to experience sexual abuse within their home communities (Milloy, 1999). The experience of sexual abuse has been linked to HIV vulnerability through illicit drug use and sex work among women (Spittal et al., 2007; Miller, 2002), as well as powerlessness in intimate relationships and an inability to negotiate safer sex, even during consensual sex (Prentice, 2005; Amaro,

1995; Senior 2008; Ship & Norton, 2001). Simoni et al.'s 2004 study emphasizes the role of trauma, especially sexual trauma and its relation with unsafe sexual behaviors, including lack of condom use when controlling for other confounders. It is therefore critical to address the experience of sexual vulnerabilities within a gendered context.

### **Drug use and sexual vulnerabilities**

HIV infection among people who use injection drugs has been attributed to sexual transmission, as preventative measures can often be neglected when engaging in sexual activity under the influence of illicit drugs (Marshall et al., 2008; Ship & Norton, 2003). Approximately 10% of 18-29 year old participants from the 2002/03 First Nations Regional Longitudinal Health Survey who lived on-reserve attributed not using condoms to having sex while under the influence. Yet, very few studies have addressed the relationship between sexual transmission of HIV and injection drug use in Canada. Among those that have recently examined this association, the emerging results are particularly troubling. Hennink's conducted a 2007 study among people who inject drugs in Regina, of which the vast majority (87.2%) were Aboriginal. The researcher discovered that approximately 70% of participants reported never using condoms with regular sexual partners. Miller et al (2006) demonstrated that among participants from the Vancouver Injection Drug Users Study (VIDUS), Aboriginal young people were less likely to report consistent condom use with casual sexual partners and more likely to self-report having been recently diagnosed with an STI. In addition, Aboriginal women involved in the VIDUS project were more likely to become pregnant, and less likely to be reporting the use of reliable contraception (Weber et al., 2003). Spittal et al. (2002)

demonstrated that among VIDUS participants, women were more likely to become HIV positive and seroconversion was associated with having unsafe sex with a regular partner. Stratthdee et al. (1997) reported survival sex work to be independently associated with HIV prevalence among participants recruited through outreach in Vancouver's Needle Exchange Program, indicating that the sexual transmission of HIV among people who inject drugs plays an important role.

The use of crack/cocaine and sexual vulnerability has been well noted in the literature. Among people who inject drugs, smoking crack has been associated with increased risk for exposure to HIV as injecting crack smokers are more likely to have sex with another injector, exchange sex for drugs or money, use drugs before or during sex, inject more frequently, having multiple sex partners and have unprotected sexual intercourse. (Booth et al., 1993; Irwin et al. 1996; Shannon et al., 2007) As approximately 55% of Cedar Project participants reported frequent crack smoking at baseline, the implications of this drug for sexual vulnerability is of concern for at risk young Aboriginal people living in Canada.

International findings indicate that the sexual risk behaviors of this vulnerable group are concerning, as high rates of needle sharing and low condom use have also been reported among individuals who use drugs (Mahanta et al, 2008; Abdala et al., 2008; Burt et al. 2006; Houlding and Davidson, 2003). Aboriginal young people in Canada who migrate to urban centres, live on the street and use injection drugs are at increased risk for engaging in survival sex work; substance abuse; inconsistent condom use; having multiple sex partners and sharing drug use equipment (Miller et al, 2002; Neron & Roffey, 2000). The implications for STI and HIV risk and transmission are clear. The

scarcity of information is distressing as the most vulnerable people in this country are not provided with information specific to the interplay of health vulnerabilities with historic and ongoing trauma within which they live.

## **1.6 Purpose of the study**

The current general and sexual health of Aboriginal men and women is continually affected by the harms of historical and intergenerational trauma. The legacies of the residential school and child welfare system imposed upon the Aboriginal people of Canada continue to impress the destructive experiences of loss, abandonment, and confusion (Fournier & Crey, 1997, p. 81). It has yet to be determined to what extent the intergenerational effects of systematic mistreatment of Aboriginal children relates to the negative health experiences among young Aboriginal men and women. However, the disproportionate health vulnerabilities among Aboriginal people in Canada, such as the rapidly increasing rates of HIV, HCV, and sexually transmitted infections can only be understood within this framework. Such health disparities must be viewed in reflection of coping with the complex and interrelated effects of social dislocation, familial isolation, poverty, and hopelessness that span over a century of historical misconduct. The multigenerational and intergenerational abuse that is only now beginning to take recognition also plays a dominant role in the disproportionate health vulnerabilities faced by Aboriginal people. Most importantly, the alarming rates of sexual abuse within Aboriginal communities and its relation to increased sexual vulnerability must be understood.

There is therefore an urgent need for increased awareness surrounding the risks of HIV and other STI acquisition from unprotected sex within the socio-historic context of



Aboriginal young people in Canada. Of urgency, the attributable risk for HIV due to the existence of untreated STIs in this population is poorly understood. In order to examine this issue, it is important to understand which independent lifetime experiences, and sexual and drug use practices affect condom use consistency. The purpose of this study is to investigate sexual vulnerability as measured by inconsistent condom use in a cohort of 605 Young Aboriginal people who use drugs at baseline and overtime in two British Columbian cities. The analyses will aim to identify which risk factors predict inconsistent condom use and therefore, increase susceptibility to STI and HIV acquisition and transmission.

The manuscripts in this thesis have the following objectives:

**Objective 1:** To compare historical trauma variables, socio-demographics, drug use patterns, sexual experiences, and HIV and HCV seropositivity, between young Aboriginal people who always use condoms and those who do not at baseline.

**Hypothesis 1:** Due the intergenerational impact of historical trauma, and in particular the existence of sexual abuse within Aboriginal communities, it is hypothesized that participants who do not use condoms consistently are more likely to have a history of sexual abuse.

**Hypothesis 1.2:** Based on previous literature in the general population, it is hypothesized that those who do not use condoms consistently also exhibit riskier behaviour with respect to other sexual practices and drug use patterns.

**Objective 2:** To compare the socio-demographics, trauma variables, drug use patterns and sex-experiences, between young Aboriginal people who use condoms consistently, and those who do not, over time.

**Hypothesis 2.1:** Due to previous research that suggests high rates of violence, substance abuse, and experience of sexual abuse within Aboriginal communities in custody, it is hypothesized that those who had do not use condoms consistently over time will have higher experiences of trauma including experiencing sexual abuse.

**Hypothesis 2.2:** Based on previous literature regarding cocaine use and sexual vulnerability, it is hypothesized that frequent crack use will be associated with inconsistent condom use over time.

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## **CHAPTER 2: SEXUAL VULNERABILITIES AMONG ABORIGINAL YOUNG PEOPLE INVOLVED IN ILLEGAL DRUG USE IN TWO CANADIAN CITIES<sup>1</sup>**

### **2.1 Introduction**

Increasing levels of sexual vulnerabilities and HIV infection Aboriginal young people are of concern for many Aboriginal communities, leaders and service providers. Health Canada (2001) concludes that these health disparities are particularly obvious in areas concerning adolescent sexual health issues such as risky alcohol use and sexual activity; unplanned pregnancy; and contracting sexually transmitted infections (STIs), namely gonorrhea, chlamydia and HIV (Health Canada, 2001). While Aboriginal people comprise 3.3% of Canada's population, they contribute to 7.5% of all prevalent HIV cases (3,600 to 5,100 cases). Among Aboriginal people in Canada, STIs are highest in the 15-24 age category (Steenbeck et al. 2006) and young people are 2.5 times more likely than their non-Aboriginal counterparts to have STIs (Rotermann, 2005).

To understand the sex related vulnerabilities of Aboriginal young people, we must first address the socio-historic circumstances ensued from the legacies of colonization and resulting multigenerational trauma. Following the Constitution Act of 1867, the Canadian government created the residential school system to forcefully assimilate Aboriginal children into western culture. This church-state partnership operated between

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<sup>1</sup> A version of this chapter will be submitted for publication. Chavoshi, N., Joseph, K., Richardson, C., Schechter, M., & Spittal, P. (2009). The Cedar Project: Sexual vulnerabilities among Aboriginal young people involved in illegal drug use in two Canadian cities

1874 and 1986 and aimed to “Kill the Indian” within the child (Milloy, 1999, p. xv) by eradicating everything associated with being “Native”, including language and identity. Over 100,000 children were removed from the care of their families into institutions that delivered decades of injury and abuse (Royal Commission of Aboriginal Peoples (RCAP), 1996; Fournier & Crey, 1997). The schools did not allow for the passing down of sanctions on culturally appropriate behavior, and distorted sexual development through pervasive sexual abuse committed by figures of authority and caretakers (Fournier & Crey, 1997, p. 47). Generations of former students brought home the devastating burdens of unresolved guilt, shame, and anger into their communities, recreating the cycle of inescapable abuse and trauma (Milloy, 1999; Barton et al., 2005; Hylton, 2002; Simoni, Sehgal, & Walters, 2004; Strickland et al., 2006; Walters & Simoni, 2002; Wesley-Esquimaux & Smolewski, 2004). Today, Aboriginal communities are experiencing very high rates of extreme violence, including sexual abuse (Provincial Officer, 2009; Adelson, 2005; Hylton, 2002; Ross, 2005).

For many Aboriginal communities, the “cultural buffers” (Walters & Simoni, 2002, p. 523) mediating vulnerability, such as sexual abuse, have eroded due to forced assimilation, increasing potential for negative health and social outcomes (Barlow, 2003). Sexual abuse is directly linked to increased vulnerability to HIV/AIDS, HCV, STIs (Cunningham et al., 1994; Miller, 1999; Zierler et al., 1991; Barlow, 2003; Devries et al. 2008), and other lifetime vulnerabilities such as homelessness, suicide, and sexual risk (Pearce et al. 2008). Such vulnerabilities enhance opportunity for detrimental lifelong consequences for the victim. Victims of sexual abuse are more likely to be revictimized later in life, tend to suffer from low self esteem and experience a sense of powerlessness

during sex (Beitchman et al. 1992), disassociate from their bodies during sex, and become a passive recipient with little control over the dynamics of the encounter (Briere & Elliot, 1994). As such, sex can become traumatic even when consensual, and the ability to negotiate condom use during sex may not be realistic.

While American and Australian researchers have conducted multiple cohort driven studies on condom use among Aboriginal people in those countries, there is limited data addressing the use of condoms as protective barriers to STIs among Aboriginal young people living in Canada. Among the few studies that have been conducted, high rates of inconsistent condom use are being reported (Calzavara et al., 1998; Devries et al., 2008). One population-based analysis of Aboriginal men and women in British Columbia demonstrated that condoms were generally not used with regular partners (Hogg et al. (2005). Another study of 11 Ontario reserves found 42% of men, and over half of women to report no condom use in the year prior to the study (Myers et al., 1999). The odds of not using condoms are estimated to be twice as high among Aboriginal men compared to their non-Aboriginal counterparts (Rotermann, 2005). A female condom project study in two British Columbian Aboriginal communities demonstrated that less than half of participants were using male condom even though 95% were sexually active (Marsden & Newmann, 2001). While these studies provided a snapshot of high rates of inconsistent condom use among Aboriginal communities, they did not focus on Aboriginal people who are further vulnerable to the harms of illicit drug use. Therefore, despite the fact that Canada's most vulnerable population continues to be at great risk for HIV and STIs, there is little information available to unpack the complex dynamics surrounding condom use within this population.

Additionally, very few studies have addressed the relationship between the sexual transmission of HIV and injection drug use in Canada. Hennink's 2007 study among people who inject drugs in Regina discovered that approximately 70% of participants reported never using condoms with regular sexual partners. Miller et al (2006) reported that among participants from the Vancouver Injection Drug Users Study (VIDUS), Aboriginal young people were less likely to report consistent condom use with casual sexual partners and more likely to self-report having been recently diagnosed with an STI. In addition, Aboriginal women involved in the VIDUS project were more likely to become pregnant, and less likely to be reporting the use of reliable contraception (Weber et al., 2003). Spittal et al. (2002) reported that among VIDUS participants, women were more likely to become HIV positive and seroconversion was associated with having unsafe sex with a regular partner. This handful of Canadian studies indicates that the sexual transmission of HIV among people who inject drugs plays a critically important role; more glaringly, it also shows how these issues remain largely understudied.

### **Purpose of this study**

As inconsistent condom use and STIs are markers for sexual vulnerability and enhance opportunities for HIV infection (Weller & Davis, 2005), the need for research that addresses this risk within the socio-historic framework of Aboriginal young people must be brought to the forefront of HIV/AIDS research in Canada. It is truly astounding that in the era of HIV, and in the context of an epidemic explosion, there are so few studies in Canada that have examined risk factors for inconsistent condom use among

Aboriginal people. Furthermore, research that is gender appropriate, culturally and historically sound, and which addresses the link between the sexual transmission of HIV and injection drug use, or the attributable risk of untreated STIs for HIV infection, is lacking.

Concerns over the paucity of research on the health vulnerabilities of Aboriginal young people in Canada led to the development of the Cedar Project: a cohort study addressing the HIV and HCV risks of Aboriginal young people who use injection and non-injection illegal drugs in British Columbia. To our knowledge, this is the only prospective study of young “at-risk” Indigenous people of its kind in North America. The study is conducted in the two British Columbian cities of Vancouver and Prince George, a forestry and mining town in the provincial northern interior. The purpose of this study is to explore the determinants of sexual vulnerability (as measured by inconsistent condom use during insertive sex) among the young 605 young men and women who participated in the Cedar Project at baseline.

## **2.3 Methods**

### **Study design and sample**

This analysis utilizes baseline data from the Cedar Project: an ongoing prospective cohort study funded by the Canadian Institutes for Health Research of young Aboriginal people who use drugs in Vancouver and Prince George, BC. The Cedar Project study follows the ‘Canadian Tri-Council Policy Statement: Ethical Conduct for Research Involving Human Subjects’ guidelines, and pays particular attention to section 6.0 pertaining to research involving Aboriginal subjects. Since they were first released in

May, 2007, The Cedar Project has embraced the new CIHR Guidelines for Health Research Involving Aboriginal People and incorporated them into our continued commitments to OCAP (Ownership, Control, Access, and Possession). Our Aboriginal collaborators, including Aboriginal AIDS Service Organizations, were involved in the conception, design and implementation of the Cedar Project. They also reviewed the results of this analysis and approved this manuscript for publication. The study was also approved by the University of British Columbia/Providence Health Care Research Ethics Board.

Eligibility criteria stipulate that participants be between 14 and 30 years of age, and have smoked or injected illicit drugs in the month prior to enrolment. Saliva screens (ORALscreen®, Avitar Onsite Diagnostics) were used to confirm drug use. Participants were eligible to participate if they had been residing in greater Vancouver or Prince George, and provided written informed consent. For the Cedar Project, Aboriginal ethnicity is based upon self-reported identification as a descendent of the First Peoples of Canada, and is inclusive of status and non-status First Nations, Métis and Inuit (for detailed definitions refer to RCAP, 1996, pp. 1-22, Vol.1). Participants in both cities were recruited through referral by health care providers, community outreach, and by word of mouth. The majority of participants in the study were recruited by word of mouth (39%) and outreach staff (32%).

All participants met with one Aboriginal study coordinator who explained procedures, sought informed consent and confirmed study eligibility. All participants were informed of research confidentiality limitations including the reporting of communicable diseases in cases of self-harm and child welfare legislation regarding



current sexual abuse. Study participants had the opportunity to be interviewed by an Aboriginal person and an individual from the research team whom they trusted. Aboriginal study personnel were involved in the design and pilot of the entire research instrument, including addressing sensitivities related to historical trauma. Participants completed an interviewer-administered questionnaire to elicit data on socio-demographic characteristics, non-injection and injection drug use practices, sexual risk behaviours and health service utilization. Venous blood samples were drawn and tested for HIV and Hepatitis C antibodies; the status of which interviewers were blind to. All eligible participants had private interviews including pre and post-test counseling with trained nurses. Follow up interviews are conducted every six months.

The Cedar Research Personnel are involved in extensive street based outreach to provide participants with the opportunity to follow up with their blood test results when desired. Upon indicating desire to receive their HIV/HCV test results, participants are provided with an appointment by the research nurse, as well as referral for HIV/AIDS and hepatitis C care if need be. In addition, subjects were also referred to clinics that provide immunization against hepatitis A and B. The Cedar Study personnel actively provide various sources of support participants request which include access to traditional healing, addiction treatment and secure housing. Participants are given a twenty dollar stipend at each study visit as compensation for their time and to facilitate transportation. All participants who completed the baseline questionnaire from October 2003 to July 2005 are included in this analysis.

## **Measures**

Being sexually vulnerable was defined as not always using a condom during anal and/or vaginal sex. Because of the known association of sexual risk taking behavior and parenteral drug use, the analysis was stratified by gender and by injection drug use. Continuous variables were elicited in reference to the 6 months before the interview. Cedar Project participants were asked if they sometimes, always, or never used condoms with their sexual partners. “Inconsistent condom” use was defined as sometimes or never using a condom during insertive (vaginal or anal) sex over the past 6 months. “Consistent condom use” was defined as always using a condom during insertive sex. Risk factors of sexual vulnerability included number of lifetime sexual partners (0-19 partners vs. 20 partners or more), and ever having a sexually transmitted infection. “Regular partners” were defined as those partners with whom the sexual relationship lasted for over three months. “Casual partners” were defined as those partners with whom sexual relationships lasted less than three months. “Clients” were defined as those partners with whom sex was traded for drugs, food, or money. Vulnerabilities including having regular partners, casual partners, or sex work clients who inject drugs and/or are HIV positive were restricted to participants who reported having those types of partners. A total of 12 participants reported not being sexually active and were categorized with participants who reported “always using condoms” with all three partner types.

Information was also obtained regarding intergenerational trauma such as ever having been taken away from biological parents (yes vs. no) and having biological parents attend residential schools (yes vs. no/unsure). “Sexual abuse” was defined as any sexual activity that participants were forced or coerced into (including childhood sexual

abuse, molestation, rape and sexual assault). Interviewers gave this definition to participants prior to asking: “Have you ever been forced to have sex against your will and/or been molested” (“yes vs. no”, “/can’t remember” were classified as missing). Participants were also asked if they had attempted to commit suicide in their lifetime and/or in the prior six months (yes vs. no). Participants who reported having stable housing were those living in their own house or apartment. “Unstable housing” was defined as living arrangements that included single room occupancy hotels, transitional living arrangements, and homelessness. “Living on the street” was defined as having lived on the streets for at least three nights during their lifetime (yes vs. no), and ever being incarcerated was defined as ever being placed in prison or jail overnight or longer (yes vs. no).

Drug use behaviors included frequent injection, type of drug use, bingeing behavior and overdose experiences. “Frequent drug use” was defined as using drugs once or more per day. Injection drug use variables were restricted to the 335 participants who reported injecting drugs in their lifetimes (yes vs. no). “Opiate use” was defined by the use of any of the following injection drugs: morphine, heroin, methadone, Talwin® (Pentazocine with Naloxone) and/or Dilaudid® (hydromorphone hydrochloride). Speedballs are a combination of cocaine and heroin. “Binge injecting” was defined as periods where drugs were injected more frequently than usual. High risk injection variables included “ever needing help injecting” (and in the past 6 months), “ever having used a syringe someone else had already used”, and “sharing syringes in the past six months” (each yes/no).

Univariate analysis included the use of contingency table analysis for categorical variables and Wilcoxon's rank sum test for continuous variables. SPSS (Windows 17.0 version) statistical software was used to facilitate the analysis. Unadjusted estimates along with their 95% confidence intervals (CIs) were obtained using logistic regression analysis to examine the associations of always and not always using condoms during insertive sex. Multivariable analyses were conducted using logistic regression to model independent variables associated with not inconsistent condom use. As recommended by Hosmer and Lemeshow (1989), a logistic model building strategy is to consider variables with p-values higher than  $<0.05$  as candidates for inclusion in the forced multivariate models. This method allows the researcher to identify variables that may be important but fall outside of predetermined significance range. Considering the sample size of this cohort, variables with p-values of up to 0.10 were considered for multivariate analysis. Interaction terms were explored within the whole cohort and location (Prince George) affected men and women differently and was therefore forced into our multivariate models.

## **2.4 Results**

### **Condom use among women**

Table 2.1 presents the baseline unadjusted demographic and traumatic life experiences among the young men (n=313) and women of the Cedar Project (n=292) who reported always (consistently) and not always (inconsistently) using condoms. Young women were more likely to use condoms inconsistently compared to men (59% vs. 41%,  $p < 0.001$ ). Inconsistent condom use was significantly higher among women who reported being married/common-law (42% vs. 14%). In other words, among women who reported

*not always* using condoms, 42% were married/common-law; while among women who reported *always* using condoms, 14% were married/common-law, a difference that is statistically significant. Young women who used condoms inconsistently were more likely to have ever been sexually abused (73% vs. 42%).

When the sexual risks associated with condom use were considered at baseline (table 2.2), likelihood of inconsistent condom use increased for young women who reported ever having an STI (57% vs. 43%). When observing type of partners, women did not use condoms consistently with their regular partners 82% of the time, with their casual partners 41% of the time, and during 12% of insertive sexual encounters with clients. Women who used condoms inconsistently, were more likely to accept increased payment to not use a condom with clients compared to women who reported always using condoms with clients (74% vs. 9%).

Table 2.3 summarizes the drug use vulnerabilities of the young participants of the Cedar Project. Inconsistent condom use was significantly higher among women who received treatment in a current (29% vs. 13%) or past (79% vs. 65%) drug or alcohol treatment program. Having been in a methadone program was marginally protective when considering inconsistent condom use at baseline (22% vs. 31%). When restricting injection drug use variables by gender, inconsistent condom use was significantly higher among women who reported needing help injecting over the past 6 months (42% vs. 24%) and who shared rigs in the past 6 months (30% vs. 15%).

In multivariable regression (table 2.7), inconsistent condom use among young women was independently associated with not being single (Adjusted Odds Ratio [AOR]: 5.37, 95% Confidence Interval [CI]: 2.79, 10.34); ever being enrolled in a drug/alcohol

treatment program (AOR: 1.95, 95%CI: 1.06, 3.60); and having ever been sexually abused (AOR: 1.80, 95%CI: 1.01, 3.20). Having ever been in a methadone maintenance treatment (MMT) was associated with reduced risk of inconsistently using condoms (AOR: 0.32, 95%CI: 0.19, 0.66).

### **Condom use among men**

Inconsistent condom use was higher among young men who live in Prince George, who were older at baseline (25 years vs. 23 years old), and who were not single (32% vs. 5%). Men who identified as gay, bisexual, transgendered or queer (GBLTQ) were less likely to report inconsistent condom use (3% vs. 12%).

When the risks associated with sexual vulnerability were considered at baseline, likelihood of inconsistent condom use increased with increased number of lifetime partners. Inconsistent condom use was also higher among men who had a regular sex partner who injects drugs (30% vs. 13%); a casual sex partner who injects drugs (32% vs. 14%); and whom ever had an STI (42% vs. 22%). Men who had engaged in survival sex work in the past 6 months were less likely to use condoms inconsistently (4% vs. 11%). When observing type of partners, men did not use condoms consistently with their regular partners, casual partners, and clients 80%, 46% and, 38% of the time respectively.

When examining the drug use vulnerabilities of men, those who reported inconsistent condom use were more likely to have ever injected drugs (54% vs. 40%), while inconsistent condom use was lower among men who reported frequently injecting crystal methamphetamine (4% vs. 16%).

In multivariable regression (table 2.8), inconsistent condom use was significantly associated with not being single (AOR: 10.95, 95%CI: 4.70, 25.53); having more than 20 lifetime sexual partners (AOR: 2.06, 95%CI: 1.24, 3.44) and marginally by living in Prince George (AOR: 1.65, 95%CI: 0.98, 2.77). Being gay, bisexual, transgendered or queer acted as a protective predictor of condom use (AOR: 0.27, 95%CI: 0.08, 0.89).

### **Condom use among young participants who inject drugs**

Table 2.4 presents the demographic and traumatic life experiences among the Cedar Participants who reported injecting drugs (n=335). These participants were more likely to inconsistently use condoms compared to young people who did not use injection drugs (58% vs. 42%,  $p < 0.001$ ). In univariate analysis, inconsistent condom use was significantly higher among individuals who were married/common-law (44% vs. 10%); ever sexually abused (59% vs. 48%); and who were ever hospitalized for a mental illness (25% vs. 16%). Participants who tested positive for HIV were less likely to use condoms inconsistently (8% vs. 18%).

Table 2.5 summarizes sexual vulnerabilities among the young Cedar participants who reported injection drug use at baseline. Likelihood of condom use inconsistency marginally increased among those who ever had an STI (53% vs., 43%). When observing type of sex partners, the participants did not use condoms with their regular partners 82% of the time, with their casual partners 47% of the time, and during 13% of their insertive sexual encounters with clients. Young people who reported inconsistent condom use with clients were more likely to have accepted increased payment to not use a condom (63% vs. 12%).

Table 2.6 summarizes the drug use vulnerabilities of young people who use injection drugs with respect to inconsistent condom use. The associations include having ever overdosed (44% vs. 32%); ever needing help injecting (62% vs. 51%); sharing rigs in the past 6 months (27% vs. 15%); and participating in a current drug or alcohol treatment program (28% vs. 16%).

In multivariable regression (table 2.9), after controlling for gender, inconsistent condom use among young people who inject drugs was significantly associated with not being single (AOR: 8.50, 95%CI: 4.29, 16.83); and marginally by having overdosed in the past 6 months (AOR: 2.25, 95%CI: 0.89-5.69) and having shared rigs in the past 6 months (AOR: 1.79, 95% CI: 3.45). Participants who were HIV positive were significantly less likely to use condoms inconsistently (AOR: 0.24, 95%CI: 0.10, 0.57).

## **2.5 Discussion**

Among the young men and women participating in the Cedar project, inconsistent condom use was reported during 52% of insertive sexual encounters at baseline. In this study, inconsistent condom use was higher among all participants who were not single. Young women with a history of sexual abuse, and those who had ever been in a drug or alcohol treatment program were more likely to use condoms inconsistently. For young women, having ever taken part in a methadone maintenance treatment program was associated with decreased likelihood of inconsistent condom use. For the young men of the Cedar Project, those who had more than twenty lifetime sexual partners were more likely to use condoms inconsistently, while the young men who identified as GBLTQ, were less likely to do so. For the young men and women who reported injection drug use,



those who were HIV seropositive at baseline were less likely to use condoms inconsistently.

In our study, a recurring predictor of inconsistent condom use was being in a relationship, an association which has been demonstrated among both men and women in the general population (PHAC, 1999). Aboriginal women who report low condom use have attributed the lack of necessity in using protective barriers to monogamy. Such low levels of condom use may be related to low levels of perceived risk amidst relatively high knowledge around HIV. (Roberts & Cahill, 1997)

Young men who identified as GBLTQ used condoms less inconsistently. Among Aboriginal men who reported having had sex with other men, consistent condom use has been reported in 71% of anal sex encounters (Hogg et al. 2005). In our study, increased number of sexual partners among men was significantly associated with inconsistent condom use. These results contrast Calzavara et al.'s (1998) findings where Aboriginal men living on reserve with multiple partners were more likely to use condoms. However, the researchers did acknowledge that younger people are at higher risk for STI due to increased number of sexual partners. Furthermore, in the general population, men who have STIs are also more likely to have multiple partners, indicating that condoms are either used irregularly or incorrectly (Crosby et al. 2008; Shlay et al. 2004).

Among the young participants of the Cedar Project, women were significantly more likely to practice inconsistent condom use when compared to Aboriginal men. Being "male" has been strongly associated with condom use among Aboriginal people in North America (Calzavara et al., 1998; Roberts & Cahill, 1997; Spittal et al. 2002; Devries 2007). Research has revealed a poor understanding of STIs, limited access to condoms

and low levels of condom use despite a high perception of risk to STIs among Aboriginal women living on reserve. Aboriginal women in Australia have stated that they perceive condoms as disease prevention tool for the man. These women also placed the responsibility of using a condom on the man or the couple, more so as a barrier to pregnancy than disease. (Roberts & Cahill, 1997) These findings call for enhanced sexual education is culturally tailored, encourages dialogue, raises awareness, and reduces stigma while accounting for gendered differences with respect to condom use.

Participants who inject drugs reported inconsistent condom use during 55% of their insertive sexual encounters. Young Aboriginal people who use drugs frequently report being under the influence of substances during sexual encounters (Devries et al., 2008). Inconsistent condom use among Aboriginal people in North America who use drugs has been positively related to trading sex for money, increased number of sexual partners, homelessness and injection drug use (Fenaughty et al. 1994). Among people surviving injection drug use in Vancouver, women are disproportionately impacted by the negative health risks of injection drug use and are experiencing a greater burden of HIV positivity when compared to men (Spittal, et al. 2002). The main mode of HIV transmission among Aboriginal women in Canada is intravenous drug use (62% vs. 32% for men), followed by heterosexual transmission (35% vs. 14% for men) (Public Health Agency of Canada, 2007). Furthermore, women who do not inject drugs and have heterosexual encounters with men who do inject drugs represent a large portion of HIV cases and are at particularly high risk (Gatali and Archibald, 2004).

The vulnerability of women is further compounded by drug use as gendered power dynamics often force them to accept unprotected sex and be second on the needle

when going through withdrawal (Spittal et al., 2002). The gendered contexts of relationships where both partners inject drugs often include the man controlling the sexual relations, cash, drug acquisition, preparation and injection (Amaro, 1995). This gendered impact is of concern for our cohort, as all our female participants are vulnerable to the harms of illicit drug use with approximately 65% of Cedar female participants reporting injection drug use at baseline. We therefore urgently require information pertaining to the sexual transmission of HIV among both the general population of people who use injection drugs and among Aboriginal people and women in particular.

For the young women in the Cedar Project, having ever been in a drug or alcohol treatment program increased the likelihood of inconsistent condom use. This association has been frequently demonstrated in previous literature involving people who use injection drugs (Sorenson & Copland, 2000; Grella & Angelin, 1996; Marshall et al. 2008). Methadone maintenance treatment (MMT) is one of the most important opiate addiction treatments in preventing HIV infection among people who are retained in programs (Kerr et al. 2005). Several studies have demonstrated MMT programs to reduce needle sharing, number of sexual partners, unprotected sex, and survival sex work (Sees et al., 2000; Iguchi, 1998; Martin et al., 1990; Watkins et al., 1992; Wells et al., 1996). Young women in the Cedar Project who ever reported being in an MMT program (approximately 33% of those who have ever been in any drug or alcohol program) were more likely to use condoms more consistently. However, we must interpret this finding with caution as approximately 82% of women in the Cedar project who have ever accessed MMT are involved in survival sex work. We know from our univariate analysis that women have high rates of condom use with clients, and therefore this association is

most likely a result of this confounder. Women involved with survival sex work often use opioid substitutions as a survival strategy and may not access methadone to stay off drugs, but rather to control the symptoms of withdrawal which enhance vulnerability for predation (Personal Communication, Spittal, 2009).

Many vulnerable populations in Vancouver with opioid dependence are not able to access and remain on treatment (Spittal et al. 2003). For the Cedar Project, involvement with MMT programming is so low that we are unable to include this variable in our prospective analyses. Aboriginal people in the VIDUS study are accessing MMT programming at half the rate of their non-Aboriginal counterparts (Kerr et al . 2005), which may be attributed to a lack of culturally sensitive treatment programming (Canadian Aboriginal AIDS Network, 2004) and/or abstinence based addiction treatments (Methadone Strategy Working Group, 2004). Aboriginal women have cited fear of having their children apprehended upon seeking treatment, calling the need for gender specific treatment facilities that allow for the accommodation of mothers and their children (Benoit et al., 2003; Poole & Trainor, 2000). For young Aboriginal people in Canada who are vulnerable to the health risks associated with drug use, the barriers to treatment access and maintenance must be explored. Furthermore, alternative opioid substitution treatments must be considered and developed where MMT is not successful.

A promising finding of our study is that young participants who tested HIV positive were more likely to use condoms consistently. The possible exposure of sexual health education during HIV treatment may have some role in this finding, and the experiences of these individuals with taking protective measures during sex warrants further investigation that will be beneficial to policy planning and programming.

The women of our cohort who reported a history of sexual abuse were nearly twice as likely to use condoms inconsistently. In Canada, Aboriginal women are more likely than men to experience sexual abuse within their home communities and in the child welfare system (Fournier & Crey, 1997; Milloy, 1999). Simoni et al. (2004) emphasized the critical role sexual trauma, and its relation with lack of condom use. History of sexual abuse has direct association with sexual risk and unsafe sex (Blum et al, 1992; Saewyc et al., 2006; Stark and Hope 2007).

Sexual abuse among Aboriginal people in Canada has resulted in many negative lifetime vulnerabilities (Pearce et al., 2008). Cedar Project participants who reported a history of sexual abuse were significantly more likely to be HIV positive (Spittal et al. 2007), and more likely to engage in sex work (Mehrabadi et al. 2008). A reduction in risk of HIV infection was reported among Cedar Project women who inject drugs and use condoms with their regular sexual partners (Craib et al. 2003). However, the researchers cautioned that most sexual health promotion programs designed for women focus on consensual sexual encounters and must address the complex psychological effects of sexual abuse on women's capabilities to negotiate sexual preferences such as using condoms. It should not be assumed that all sexual encounters are consensual, even with regular partners (Wyatt et al., 2002). Aboriginal women are dependent, both financially and otherwise, on their male partner may forcefully remain in relationships that are not sexually safe (Larkin et al., 2007). These women are less able to negotiate safe sex which can further compound existing factors of violence and safety including sexual abuse, poverty, or abandonment (Amaro, 1995; Ship & Norton, 2001).

## **Limitations and conclusions**

There are several limitations to this study. First, the findings of this study may not be generalizable to all Aboriginal young people living in Canada as only participants who report using drugs are included. Second, as the outreach selection methodology is non-random, those individuals who are socially isolated may not have been captured. Third, due to the self-reporting nature of our interviews, all findings are subject to recall and social desirability bias. Fourth, we were not able to ascertain causation, as temporality issues make the interpretation of multivariate analyses difficult. However, as the median age of first sexual abuse is much lower than the median age of starting consensual sex, it is most likely that the effects of sexual abuse precedes the onset of sexual activity, and therefore may have direct consequences for sexual vulnerability such as inconsistent condom use. Finally, we were not able to investigate condom use by type of partner in a multivariate model as the exposure was related to our outcome. Future research is required to understand how sexual vulnerabilities resulting from inconsistent condom use vary by type of partner.

In conclusion, our analysis indicates that more than half of the young men and women participating in the Cedar Project are using condoms inconsistently. We also discovered that women who have experienced sexual abuse are more likely to not use condoms consistently. Such a finding has grave implications for sexual health as marginalized women face increased risk of contracting life threatening diseases. Furthermore, as 30% of the young men of the Cedar Project have also reported experiencing sexual abuse, the vulnerabilities of these young men should not be overlooked.

Comprehensive strategies are required to intervene, treat, and prevent the cycle of abuse. One intervention strategy is to create public awareness, especially at the community level, for the dual purpose of identifying and responding to victims. ‘Culture as intervention’ and intervention programming built upon histories of resilience and resistance are essential (Duran & Walters, 2004; Majumdar et al. 2004). The appalling paucity of information surrounding the sexual vulnerabilities of Aboriginal young people calls for an urgent prioritization of data and services for sexual abuse treatment, and sexual health awareness that is culturally competent and safe. Further research is immediately required to examine that sexual transmission of HIV among Aboriginal people who use injection drugs in Canada and the association between untreated STIs and increased risk for HIV infection. Without the appropriate development of interventions and generation of information, we can only anticipate a surge in the HIV epidemic in this country.

**Table 2.1: Comparison of demographic and traumatic life events among the young women of the Cedar Project who always (n=119) and not always (n=173) use a condom during insertive sex, and among the young men of the Cedar Project who always (n=169) and not always (n=144) use a condom during insertive sex**

Variable	Females (n=292)			Males (n = 313)		
	Always n (%)	Not Always n (%)	p-value	Always n (%)	Not Always n (%)	p-value
<b>Baseline interview location</b>						
Vancouver	58 (48.7)	92 (53.2)	0.456	<b>90 (53.3)</b>	<b>60 (41.7)</b>	<b>0.041</b>
Prince George	61 (51.3)	81 (46.8)		<b>79 (46.7)</b>	<b>84 (58.3)</b>	
<b>Mean age at baseline (SD)</b>	22.78 4.06	23.38 3.95	0.207	<b>23.15</b> <b>4.22</b>	<b>24.8</b> <b>3.62</b>	<b>&lt;0.001</b>
<b>Sexual identity GLBTQ</b>	18 (15.1)	25 (14.5)	0.873	<b>20 (11.8)</b>	<b>4 (2.8)</b>	<b>0.003</b>
<b>At least one parent in residential school</b>	55 (46.6)	77 (44.8)	0.757	83 (49.7)	63 (43.8)	0.294
<b>Ever taken from biological parents</b>	76 (63.9)	123 (71.1)	0.192	106 (62.7)	86 (59.7)	0.587
<b>Mean age first taken into care (SD)</b>	5.18 4.27	5.60 3.95	0.482	5.09 3.40	5.70 4.29	0.317
<b>Relationship status not single</b>	<b>16 (13.6)</b>	<b>72 (41.6)</b>	<b>&lt;0.001</b>	<b>8 (4.7)</b>	<b>46 (31.9)</b>	<b>&lt;0.001</b>
<b>Ever sexually abused</b>	<b>69 (41.5)</b>	<b>126 (73.3)</b>	<b>0.008</b>	45 (27.3)	48 (33.8)	0.214
<b>Housing unstable past 6 months</b>	49 (42.6)	68 (42.0)	0.916	77 (48.1)	69 (49.6)	0.794
<b>Ever on streets for &gt;3 nights</b>	70 (59.3)	113 (65.3)	0.299	118 (70.2)	104 (72.7)	0.628
<b>Ever been in prison since using drugs</b>	67 (56.3)	81 (46.8)	0.598	128 (75.7)	108 (75.5)	0.965
<b>Been in prison past six months</b>	19 (16.0)	25 (14.5)	0.722	44 (26.0)	41 (28.5)	0.629
<b>Mean age first in prison (SD)</b>	16.27 3.86	16.34 4.05	0.924	16.22 3.58	15.86 3.47	0.758
<b>Ever attempt suicide</b>	46 (38.7)	78 (45.1)	0.275	49 (29.2)	51 (35.4)	0.238
<b>Ever diagnosed mental illness</b>	32 (26.9)	46 (26.6)	0.954	55 (32.9)	49 (34.3)	0.804
<b>Ever hospitalized for mental illness</b>	23 (19.7)	37 (21.8)	0.666	25 (14.9)	25 (17.7)	0.498
<b>Ever involved in survival sex</b>	83 (69.7)	121 (69.9)	0.972	32 (19.2)	21 (14.6)	0.284
<b>Age first involved in survival sex (SD)</b>	<b>15.96</b> <b>3.17</b>	<b>16.91</b> <b>3.90</b>	<b>0.070</b>	17.19 3.36	18.10 3.35	0.340
<b>Survival sex past 6 months</b>	71 (59.7)	95 (54.9)	0.421	<b>18 (10.7)</b>	<b>5 (3.5)</b>	<b>0.015</b>
<b>Ever been pregnant</b>	<b>81 (69.8)</b>	<b>142 (83.0)</b>	<b>0.008</b>	n/a	n/a	n/a



**Table 2.1: Comparison of demographic and traumatic life events among the young women of the Cedar Project who always (n=119) and not always (n=173) use a condom during insertive sex, and among the young men of the Cedar Project who always (n=169) and not always (n=144) use a condom during insertive sex**

<b>Ever been denied services due to drug use</b>	21 (17.6)	34 (19.7)	0.667		26 (15.4)	32 (22.2)	0.121
<b>Ever been denied shelter due to drug use</b>	29 (24.4)	47 (27.3)	0.573		47 (27.8)	40 (27.8)	0.995
<b>HIV positive antibody status at baseline</b>	16 (14.2)	19 (11.0)	0.434		<b>10 (6.0)</b>	<b>1 (2.2)</b>	<b>0.099</b>
<b>HCV positive antibody status at baseline</b>	52 (46.8)	65 (40.1)	0.270		36 (22.4)	36 (26.9)	0.370
<b>Education &lt;grade 10</b>	34 (29.1)	59 (34.3)	0.349		49 (29.2)	32 (22.4)	0.174

**Table 2.2: Sexual vulnerability among the young women of the Cedar Project who always (n=119) and not always (n=173) use a condom during insertive sex, and among the young men of the Cedar Project who always (n=169) and not always (n=144) use a condom during insertive sex**

Variable	Females (n=292)			Males (n = 313)		
	Always n (%)	Not Always n (%)	p-value	Always n (%)	Not Always n (%)	p-value
Age of first willing sex (SD)	14.56 2.20	14.59 1.96	0.887	14.62 2.47	14.57 2.33	0.844
Number of lifetime sex partners >20	27 (24.1)	49 (29.0)	0.615	<b>37 (22.0)</b>	<b>51 (35.4)</b>	<b>0.010</b>
20-100	38 (33.9)	57 (33.7)		<b>18 (10.7)</b>	<b>20 (13.9)</b>	
Sexually abused past 6 months	7 (5.9)	18 (10.4)	0.175	0 (0.0)	0 (0.0)	
Insertive sex with regular partner*	32 (18.1)	145 (81.9)		23 (19.8)	93 (80.2)	
Regular sex partner uses injection drugs*	8 (25.0)	40 (27.6)	0.766	<b>3 (13.0)</b>	<b>28 (30.1)</b>	<b>0.098</b>
Regular sex partner HIV positive*	2 (6.3)	8 (5.5)	1.000	0 (0.0)	1 (1.1)	1.000
Insertive sex with casual partner **	60 (59.4)	41 (40.6)		71 (54.2)	60 (45.8)	
Casual sex partner uses injection drugs **	12 (20.0)	9 (22.0)	0.812	<b>10 (14.1)</b>	<b>19 (31.7)</b>	<b>0.016</b>
Casual partner HIV positive**	0 (0.0)	1 (2.4)	0.406	0 (0.0)	2 (1.4)	0.211
Insertive sex with clients ***	146 (88.5)	19 (11.5)		5 (62.5)	3 (37.5)	
Have been offered money not use condom***	117 (80.1)	17 (89.5)	0.532	1 (20.0)	0 (0.0)	1.000
Accepted money not use Condom***	<b>13 (8.8)</b>	<b>14 (73.7)</b>	<b>&lt;0.001</b>	1 (20.0)	0 (0.0)	1.000
Ever had STI	<b>51 (42.9)</b>	<b>99 (57.2)</b>	<b>0.016</b>	<b>37 (21.9)</b>	<b>60 (41.7)</b>	<b>&lt;0.001</b>
Had an STI in the past 6 months	13 (10.9)	27 (15.6)	0.253	6 (3.6)	9 (6.2)	0.265

\* Restricted to participants who reported having regular sex partners (n females = 177, n males = 116)

\*\* Restricted to participants who reported having casual sex partners (n females =101, n males = 131)

\*\*\*Restricted to participants who reported having clients (n females = 165, n males = 8)

**Table 2.3: Drug related vulnerability among the young women of the Cedar Project who always (n=119) and not always (n=173) use a condom during insertive sex, and among the young men of the Cedar Project who always (n=169) and not always (n=144) use a condom during insertive sex**

Variable	Female (n=292)			Males (n=313)		
	Always n (%)	Not Always n (%)	p-value	Always n (%)	Not Always n (%)	p-value
Sleeping pills past 6 months	13 (10.9)	32 (18.5)	0.078	24 (14.2)	30 (20.8)	0.122
Crack smoking past 6 months	109 (91.6)	161 (93.1)	0.641	<b>140 (82.8)</b>	<b>132 (91.7)</b>	<b>0.021</b>
Daily crack smoking	79 (66.4)	110 (63.6)	0.645	<b>73 (43.2)</b>	<b>68 (47.2)</b>	<b>0.082</b>
Cocaine smoking past 6 months	47 (39.5)	59 (34.1)	0.346	77 (45.6)	71 (49.3)	0.509
Daily cocaine smoking	12 (10.1)	17 (9.8)	0.597	25 (14.8)	16 (11.1)	0.322
Smoking crystal past 6 months	29 (24.4)	36 (20.8)	0.472	72 (42.6)	55 (38.2)	0.429
Daily crystal smoking	5 (4.2)	6 (3.5)	0.771	21 (12.4)	15 (10.4)	0.759
Opiate smoking past 6 months	16 (13.4)	23 (13.3)	0.970	16 (9.5)	20 (13.9)	0.222
Daily opiate smoking	5 (4.2)	6 (3.5)	0.939	6 (3.6)	4 (2.8)	0.241
Ever overdose	36 (30.5)	64 (37.0)	0.253	37 (21.9)	40 (27.8)	0.228
Overdose past 6 months	<b>9 (7.6)</b>	<b>24 (13.9)</b>	<b>0.099</b>	6 (3.6)	7 (4.9)	0.562
Ever use injection drugs	82 (68.9)	107 (61.8)	0.215	<b>68 (40.2)</b>	<b>78 (54.2)</b>	<b>0.014</b>
Mean age of first injection (SD)	17.28 3.67	17.64 4.20	0.533	19.15 4.04	18.94 4.19	0.758
IV heroin past 6 months <sup>^</sup>	40 (48.8)	60 (46.1)	0.319	28 (41.2)	22 (28.2)	0.099
Daily heroin injection <sup>^</sup>	31 (37.8)	40 (37.4)	0.312	12 (17.6)	9 (11.5)	0.255
IV cocaine past 6 months <sup>^</sup>	47 (57.3)	55 (51.4)	0.419	33 (48.5)	42 (53.8)	0.521
Daily cocaine injection <sup>^</sup>	24 (29.3)	30 (28.0)	0.678	14 (20.6)	18 (23.1)	0.814
IV opiate past 6 months <sup>^</sup>	49 (59.8)	70 (65.4)	0.424	35 (51.5)	34 (43.6)	0.341
Daily opiate injection <sup>^</sup>	38 (46.3)	49 (45.8)	0.481	16 (23.5)	13 (16.7)	0.521
IV crystal past 6 months <sup>^</sup>	7 (8.5)	14 (13.1)	0.324	<b>21 (30.9)</b>	<b>13 (16.7)</b>	<b>0.043</b>
Daily crystal injection <sup>^</sup>	2 (2.4)	4 (3.7)	0.615	<b>11 (16.2)</b>	<b>3 (3.8)</b>	<b>0.033</b>

**Table 2.3: Drug related vulnerability among the young women of the Cedar Project who always (n=119) and not always (n=173) use a condom during insertive sex, and among the young men of the Cedar Project who always (n=169) and not always (n=144) use a condom during insertive sex**

<b>Need help injecting past 6 months<sup>^</sup></b>	<b>20 (24.4)</b>	<b>45 (42.1)</b>	<b>0.011</b>	35 (51.5)	44 (56.4)	0.550
<b>Rig sharing past 6 months<sup>^</sup></b>	<b>12 (14.6)</b>	<b>32 (29.9)</b>	<b>0.014</b>	10 (14.7)	17 (21.8)	0.271
<b>Ever in drug or alcohol Treatment program</b>	<b>77 (64.7)</b>	<b>137 (79.2)</b>	<b>0.006</b>	101 (59.8)	98 (68.1)	0.129
<b>Currently in drug or alcohol treatment program</b>	<b>15 (12.6)</b>	<b>49 (28.5)</b>	<b>0.001</b>	25 (14.9)	26 (18.1)	0.450
<b>Methadone treatment program in past 6 months</b>	1 (0.8)	4 (2.3)	0.652	1 (0.06)	1 (0.07)	1.000
<b>Ever in Methadone treatment program</b>	<b>36 (30.5)</b>	<b>37 (21.6)</b>	<b>0.088</b>	11 (6.5)	9 (6.2)	0.926
<b>Currently in Methadone treatment program</b>	10 (8.5)	16 (9.4)	0.797	5 (3.0)	3 (2.1)	0.730

<sup>^</sup> Restricted to participants who reported injection drug use (n female = 189, n male = 146)

\* All “frequency” variables compare odds of using the specific drug more than daily to less than daily and exclude non-users.

**Table 2.4: Comparison of demographic and traumatic life events among Cedar participants who reported using injection drugs (n=335), and who always (n=150) and not always (n=185) use a condom during insertive sex**

Variable	Always n (%)	Not Always n (%)	p-value
<b>Baseline interview location</b>			
Vancouver	84 (56.0)	91 (49.2)	0.215
Prince George	66 (44.0)	94 (50.8)	
<b>Gender</b>			
Male	68 (45.3)	78 (42.2)	0.561
Female	82 (54.7)	107 (57.8)	
<b>Mean age at baseline (SD)</b>	24.62 3.77	24.58 3.62	0.924
<b>Sexual identity GLBTQ</b>	22 (14.7)	24 (13.0)	0.669
<b>At least one parent in residential school</b>	81 (54.7)	86 (46.7)	0.148
<b>Ever taken from biological parents</b>	90 (60.0)	125 (67.6)	0.151
<b>Mean age first taken into care (SD)</b>	5.17 3.81	5.44 4.23	0.637
<b>Relationship status not single</b>	<b>15 (10.0)</b>	<b>81 (43.8)</b>	<b>&lt;0.001</b>
<b>Ever sexually abused</b>	<b>71 (48.0)</b>	<b>108 (58.7)</b>	<b>0.051</b>
<b>Housing unstable past 6 months</b>			
Unstable	68 (47.2)	82 (46.1)	0.836
<b>Ever on streets for &gt;3 nights</b>	107 (71.8)	132 (71.7)	0.988
<b>Ever been in prison since using drugs</b>	115 (76.7)	133 (72.3)	0.362
<b>Been in prison past 6 months</b>	37 (24.7)	48 (25.9)	0.789
<b>Mean age first in prison overnight (SD)</b>	16.29 3.79	16.02 3.87	0.606
<b>Ever attempt suicide</b>	54 (36.2)	82 (44.3)	0.135
<b>Ever diagnosed mental illness</b>	46 (30.7)	66 (35.9)	0.316
<b>Ever hospitalized for mental illness</b>	<b>23 (15.6)</b>	<b>45 (25.0)</b>	<b>0.038</b>
<b>Ever involved in survival sex</b>	82 (54.7)	98 (53.0)	0.757
<b>Age first involved in survival sex (SD)</b>	16.23 3.27	16.94 3.93	0.205
<b>Survival sex past 6 months</b>	67 (44.7)	68 (36.8)	0.142
<b>Ever been pregnant (females)</b>	<b>59 (72.0)</b>	<b>91 (85.8)</b>	<b>0.019</b>

**Table 2.4: Comparison of demographic and traumatic life events among Cedar participants who reported using injection drugs (n=335), and who always (n=150) and not always (n=185) use a condom during insertive sex**

<b>Ever been denied services due to drug use</b>	29 (19.3)	47 (25.4)	0.187
<b>Ever been denied shelter due to drug use</b>	50 (33.3)	63 (34.1)	0.890
<b>HIV positive antibody status at baseline</b>	<b>25 (17.5)</b>	<b>15 (8.3)</b>	<b>0.012</b>
<b>HCV positive antibody status at baseline</b>	84 (60.4)	97 (56.4)	0.473
<b>Education &lt;grade 10</b>	41 (27.7)	65 (35.5)	0.130

**Table 2.5: Sexual vulnerability among Cedar participants who reported using injection drugs (n=335), and who always (n=150) and not always (n=185) use a condom during insertive sex**

Variable	Always n (%)	Not Always n (%)	p-value
Age of first willing sex (SD)	14.71 2.45	14.35 2.21	0.170
Number of lifetime sex partners			
20-99	34 (23.8)	53 (29.1)	0.328
100+	41 (28.7)	57 (31.3)	
Sexually abused past 6 months	6 (4.0)	12 (6.5)	0.316
Condom use for insertive sex with regular partner*	31 (18.0)	141 (82.0)	
Regular sex partner is uses injection drugs *	9 (29.0)	61 (43.3)	0.144
Regular sex partner HIV+*	2 (6.5)	7 (5.0)	0.666
Condom use for insertive sex with casual partner **	62 (53.0)	55 (47.0)	
Casual sex partner uses injection drugs **	15 (24.2)	19 (34.5)	0.218
Casual partner HIV+**	0 (0.0)	2 (1.7)	0.219
Condom use for insertive sex with clients ***	108 (87.1)	16 (12.9)	
Offered money not use condom***	87 (80.6)	5 (31.3)	0.324
Offered and accepted money not use condom *** past 6 months	<b>13 (11.9)</b>	<b>10 (62.5)</b>	<b>&lt;0.001</b>
Ever had STI	<b>65 (43.3)</b>	<b>98 (53.0)</b>	<b>0.079</b>
Had an STI in the past 6 months	13 (8.7)	24 (13.0)	0.211

\* Restricted to participants who reported having regular sex partners (n = 172)

\*\* Restricted to participants who reported having casual sex partners (n = 117)

\*\*\*Restricted to participants who reported having clients (n = 125)

**Table 2.6: Drug related vulnerability among Cedar participants who reported using injection drugs (n=335), and who always (n=150) and not always (n=185) use a condom during insertive sex**

Variable	Always n (%)	Not Always n (%)	p-value
Sleeping pills past 6 months	24 (16.0)	45 (24.3)	<b>0.061</b>
Crack smoking past 6 months	131 (87.3)	170 (91.9)	0.169
Daily crack smoking	91 (60.7)	115 (62.2)	0.473
Cocaine smoking past 6 months	66 (44.0)	77 (41.6)	0.662
Daily cocaine smoking	21 (14.0)	25 (13.5)	0.906
Smoking crystal past 6 months	41 (27.3)	64 (34.6)	0.154
Daily crystal smoking	10 (6.7)	14 (7.6)	0.347
Heroin smoking past 6 months	42 (28.0)	65 (35.1)	0.164
Daily heroin smoking	17 (11.3)	19 (10.3)	0.139
Opiate smoking past 6 months	24 (16.0)	32 (17.3)	0.752
Daily opiate smoking	10 (6.7)	7 (3.8)	0.270
Ever overdose	<b>48 (32.0)</b>	<b>81 (43.8)</b>	<b>0.028</b>
Overdose past 6 months	<b>8 (5.3)</b>	<b>22 (11.9)</b>	<b>0.037</b>
Mean age of first injection (SD)	18.12 3.94	18.18 4.23	0.898
IV crystal past 6 months	28 (18.7)	27 (14.6)	0.317
Daily crystal injection	13 (8.7)	7 (3.8)	0.172
IV cocaine past 6 months	80 (53.3)	97 (52.4)	0.870
Daily cocaine injection	38 (25.3)	48 (25.9)	0.953
IV heroin past 6 months	68 (45.3)	82 (44.3)	0.853
Daily heroin injection	43 (28.7)	49 (26.5)	0.894
IV morphine past 6 months	32 (21.3)	53 (28.6)	0.126
Daily morphine injection	13 (8.7)	17 (9.2)	0.229



**Table 2.6: Drug related vulnerability among Cedar participants who reported using injection drugs (n=335), and who always (n=150) and not always (n=185) use a condom during insertive sex**

<b>IV dilaudid 6 months</b>	20 (13.3)	31 (16.8)	0.386
<b>Daily dilaudid injection</b>	8 (5.3)	12 (6.5)	0.684
<b>IV opiates past 6 months</b>	84 (56.0)	104 (56.2)	0.968
<b>Daily opiate injection</b>	54 (36.0)	62 (33.5)	0.806
<b>IV speedballs past 6 months</b>	35 (23.3)	39 (21.1)	0.621
<b>Daily speedballs injection</b>	16 (10.7)	14 (7.6)	0.614
<b>Ever need help injecting</b>	<b>76 (50.7)</b>	<b>114 (61.6)</b>	<b>0.044</b>
<b>Need help injecting past 6 months</b>	<b>38 (25.3)</b>	<b>64 (34.6)</b>	<b>0.067</b>
<b>Helped anyone inject ever</b>	54 (36.0)	69 (37.3)	0.806
<b>Binge injection drug use past 6 months</b>	28 (18.7)	29 (15.7)	0.469
<b>Rig borrowing past 6 months</b>	<b>18 (12.0)</b>	<b>38 (20.5)</b>	<b>0.037</b>
<b>Rig lending past 6 months</b>	<b>13 (8.7)</b>	<b>32 (17.3)</b>	<b>0.021</b>
<b>Rig sharing past 6 months</b>	<b>22 (14.7)</b>	<b>49 (26.5)</b>	<b>0.008</b>
<b>Ever drug or alcohol treatment</b>	107 (71.3)	146 (78.9)	0.108
<b>Currently in drug or alcohol treatment</b>	<b>24 (16.0)</b>	<b>52 (28.3)</b>	<b>0.008</b>
<b>Methadone treatment program past 6 months</b>	2 (1.3)	5 (2.7)	0.466
<b>Ever in methadone treatment program</b>	45 (30.2)	42 (22.8)	0.128
<b>Currently in methadone treatment program</b>	14 (9.4)	18 (9.8)	0.905
<b>Use drugs while in jail past 6 months</b>	14 (9.3)	18 (9.7)	0.902

\* All “frequency” variables compare odds of using the specific drug more than daily to less than daily and exclude non-users.

**Table 2.7: Adjusted multivariate regression analysis of risk factors predicting likelihood of inconsistent condom use among the young women of the Cedar Project (n=292)**

<b>Variable</b>	<b>AOR (95% CI)</b>	<b>p-value</b>
Location (Prince George)	1.72 (0.984, 3.11)	0.06
<b>Not single</b>	<b>5.37 (2.79, 10.34)</b>	<b>&lt;0.001</b>
<b>Ever sexually abused</b>	<b>1.80 (1.01-3.20)</b>	<b>0.04</b>
Ever had STI	1.38 (0.80-2.39)	0.25
Overdose past 6 months	1.86 (0.76-4.52)	0.17
<b>Ever drug/alcohol treatment</b>	<b>1.95 (1.06-3.60)</b>	<b>0.03</b>
<i>Ever been in methadone treatment program</i>	<i>0.32 (0.19-0.66)</i>	<i>0.001</i>

**Table 2.8: Adjusted multivariate regression analysis of risk factors predicting likelihood of inconsistent condom use among the young men of the Cedar Project (n=313)**

<b>Variable</b>	<b>AOR (95% CI)</b>	<b>p-value</b>
Location (Prince George)	1.65 (0.98-2.77)	0.06
<b><i>GBLTQ</i></b>	<b><i>0.27 (0.08-0.89)</i></b>	<b><i>0.03</i></b>
<b>Not single</b>	<b>10.95 (4.70-25.53)</b>	<b>&lt;0.001</b>
<b>Number of sexual partners &gt;20</b>	<b>2.06 (1.24-3.44)</b>	<b>0.01</b>
Ever had STI	2.24 (0.68-7.38)	0.19
Smoke crack daily	1.70 (0.76-3.78)	0.20

**Table 2.9: Adjusted multivariate regression analysis of risk factors predicting likelihood of inconsistent condom use among Cedar participants who use injection drugs (n=335)**

<b>Variable</b>	<b>AOR (95% CI)</b>	<b>p-value</b>
Gender	0.877 (0.51-1.48)	0.60
Location (Prince George)	1.22 (0.72-2.07)	0.45
<b>Not single</b>	<b>8.50 (4.29-16.84)</b>	<b>&lt;0.001</b>
Ever sexually abused	1.52 (0.89-2.60)	0.13
<b><i>HIV positive</i></b>	<b><i>0.24 (0.10-0.57)</i></b>	<b><i>0.001</i></b>
Overdose past 6 months	2.25 (0.89-5.68)	0.09
Shared rigs past 6 months	1.78 (0.92-3.45)	0.09
Need help injecting past 6 months	1.42 (0.81-2.49)	0.23
Current drug/alcohol treatment	1.62 (0.86-3.07)	0.14

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## **CHAPTER 3: INCREASING SEXUAL VULNERABILITIES OVER TIME AMONG ABORIGINAL YOUNG PEOPLE INVOLVED IN ILLEGAL DRUG USE IN TWO CANADIAN CITIES<sup>1</sup>**

### **3.1 Introduction**

Intergenerational trauma, defined as the transmission of collective emotional and psychological injury over the lifespan and across generations, is continually impacting the health of Aboriginal men and women (Royal Commission of Aboriginal Peoples - RCAP, 1996, vol 3, ch 2; Yellow Horse & Brave Heart, 2004). Aboriginal communities are experiencing rapidly increasing rates of HIV and other sexually transmitted infections (STIs) (Public Health Agency of Canada, 2007; Rotermann, 2005). These disproportionate health vulnerabilities must be viewed in light of coping strategies aimed at dealing with the complex and interrelated effects of social dislocation, poverty, hopelessness, substance use, and human rights violations that span over a century of historical misconduct.

The historical legacy of the residential schools and destruction of traditions play large roles in the current health status of Aboriginal people in Canada (Milloy, 1999, p 299). Operating for over 100 years, the residential schools displaced over 100,000 Aboriginal children from their homes and communities, into mismanaged, ill kept centers of disease, neglect, and rampant abuse (RCAP, 1996). The trauma of sexual abuse has

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been reverberating through generations of Aboriginal people as lessons of total adult control and sexual abuse were brought home by the residential school survivors (Fournier & Crey, 1997, p.63). Through forced assimilation, the “cultural buffers” (Walters & Simoni, 2002, p. 523) that mediate vulnerability were dismantled, increasing risk for negative health and social outcomes (Barlow, 2003). Aboriginal people now face high prevalence of sexual abuse within their communities as the cycle of historical and intergenerational trauma continues (Dumont-Smith and Sioui-Labelle, 1991; Cariboo Tribal Council, 1992; Milloy, 1999; Provincial Health Officer, 2009; Métis Nation British Columbia Provincial Survey, 2006).

The association of having a history of sexual abuse and reduced self determination to negotiate during sexual encounters has been well established (Barlow, 2003; Devries et al. 2008; Beitchman et al., 1992, Browne & Finkelhor, 1986; Courtois, 1988; Maltz & Holman, 1987; Briere & Elliot, 1994). Furthermore, the established literature has continuously linked sexual abuse to increased risk for HIV infection (Cunningham et al., 1994; Miller, 1999; Zierler et al., 1991). As such, victims of sexual abuse may be at increased risk for other lifetime vulnerabilities (Braitstein et al., 2003; Whetton et al., 2006), yet this topic has not been fully explored within the Aboriginal communities of Canada.

Sexual vulnerabilities are enhanced through the incorrect and/or inconsistent use of condoms as barriers to sexually transmitted infections (Weller and Davis, 2005), yet only a small number of studies in this country have addressed this issue. Of particular concern is the vulnerability of young Aboriginal people to STIs. Aboriginal people are becoming infected with HIV at a younger age compared to non-Aboriginal persons.

Aboriginal people between the ages of 20-29 contributed to 28% of positive HIV tests among Aboriginal people from 1998-2006, compared to only 20% of non-Aboriginal cases (Public Health Agency of Canada, 2007). In Mill et al.'s (2008) national HIV study, almost half of the Aboriginal young people who sought an HIV test cited unprotected sex as their reason to do so. Compared to non-Aboriginal youth in Canada, the study reported that Aboriginal young people were less likely to report consistent condom use with casual sexual partners and more likely to self-report a recent STI diagnosis. Larkin et al.'s (2007) interviews with Aboriginal young people in rural Ontario schools revealed only 20% of participants were using condoms consistently. Shercliffe et al. (2007) surveyed 68 young Aboriginal people recruited through community agencies in Regina, and revealed that only 50% of young women used condoms in their last sexual encounter. One sexual health study among urban Aboriginal youth in Ontario reported that just over half of sexually active young people used condoms, indicating that that a substantial proportion of sexually active young people were at risk of contracting an STI (Ontario Federation of Indian Friendship Centres, 2002).

The inconsistency of condom use among people who use drugs has also been consistently noted in the established literature (Siegel et al. 1993; Nyamathi et al. 1995; Edlin et al. 1992; Baldwin et al., 2000). HIV infection among people who use injection drugs has been attributed to the pharmacologically induced risks of unsafe sex (Marshall et al., 2008; Ship & Norton, 2003; Spittal et al., 2002). Yet, there is little information regarding the sexual transmission of HIV among Aboriginal people who use drugs in Canada. There is an urgent need for increased awareness surrounding the risks of the

transmission of STIs and HIV from unprotected sex in this population. (Miller et al., 2006)

Due to social and biological vulnerabilities, women face increased risk for contracting HIV and other sexually transmitted infections. The reality of physical and emotional violence threatening women who attempt to introduce condoms into their sexual encounters must be considered (Mays & Cochran, 1988; Amaro, 1995). Variations in gendered power dynamics can impact the interpersonal decisions made during sex, including the use of protection (Dixon-Mueller, 1993). If the male assumes the greater power role in the sexual encounter, sexual initiation from the male and refusal to use condoms is highly possible (Blumstein & Schwartz, 1983).

In Canada, women are twice more likely to become sexually abused compared to men (Libby et al., 2005) and sexual abuse is higher among Aboriginal women compared to non-Aboriginal women (Young & Katz, 1998; Evans- Campbell et al. 2006) and Aboriginal men (Fournier & Crey, 1997; Milloy, 1999). Aboriginal young women who have been in sexually abusive relationships are more likely to engage in unsafe sexual practices compared to women who have not (Senior, 2008; Simoni et al. 2004; Blum et al, 1992; Saewyc et al., 2006; Devries et al. 2008). As such, Aboriginal women are at particular risk for the sexual vulnerabilities resulting from failing to use barriers to protection. At the same time, Aboriginal women are initiating sex at younger ages (Larkin et al. 2007) and have more sexual partners compared to non-Aboriginal women (Young & Katz, 1998).

## **Purpose of this study**

There are large gaps in information related to understanding the sexual vulnerabilities of Aboriginal people. Aboriginal people are disproportionately affected by sexually transmitted infectious diseases such as gonorrhea, chlamydia and AIDS (Devries et al., 2008); and overrepresented among people who use injection drugs, amongst whom low reported levels of condom use have been reported (Hogg et al., 2005; Devries et al., 2008). In Canada, there is very little information on the sexual vulnerabilities of Aboriginal people, especially young people, with respect to inconsistent condom use, risk for contracting STIs, the sexual transmission of HIV among people who use injection drugs, nor the attributable risk for HIV due to untreated STIs. The majority of available studies are cross-sectional, do not follow a cohort prospectively, do not provide any background information on the traumatic lifetime experiences of people at high risk for STI, have limited samples, and do not specifically focus on Aboriginal people. Therefore, understanding these levels of sexual risk within a prospective framework specific to Aboriginal cohorts is of great importance for policy planning and prevention efforts.

The Cedar Project is a cohort study addressing the HIV and HCV risks of Aboriginal young people who use injection and non-injection illegal drugs in Vancouver and Prince George, British Columbia. The study was developed in response to concerns about the lacking body of information regarding the health vulnerabilities of Aboriginal people in Canada. The purpose of this study is to compare the sexual vulnerabilities as measured by the inconsistent use of condoms during insertive sex over time within the cohort of the 605 Aboriginal young men and women participating in the Cedar project.

## **3.2 Methods**

This study is conducted with data from the Cedar Project: an ongoing prospective cohort study of young Aboriginal people who use drugs in Vancouver and Prince George, BC. The analysis includes all data from all participants who completed the baseline questionnaire from October 2003 to July 2005. The eligibility criteria for participants require participants to be between 14 and 30 years of age, and have smoked or injected illicit drugs prior to enrolment. The Cedar Project honors the Canadian Tri-Council Policy Statement: Ethical Conduct for Research Involving Human Subjects, with particular attention paid to section 6.0 pertaining to research involving Aboriginal subjects. The Cedar Project has embraced the new CIHR Guidelines for Health Research Involving Aboriginal People and incorporates these guidelines into our ongoing commitments to OCAP (Ownership, Control, Access, and Possession). Aboriginal collaborators were involved in the design and implementation of the study and reviewed all findings and materials presented for publication prior to dissemination. The study is also approved by the University of British Columbia/Providence Health Care Research Ethics Board and is funded by the Canadian Institutes for Health Research.

### **Study design**

Saliva screens (Oral-screen, Avitar Onsite Diagnostics) were used to confirm drug use. Participants must have been residing in the greater Vancouver area or Prince George. Participants in both cities were recruited through referral by health care providers, community outreach, and by word of mouth. All participants met with one study coordinator who explained procedures, sought written informed consent and



confirmed study eligibility. The term 'Aboriginal status' was based on self-report and is inclusive of individuals who identify as Métis, Aboriginal, First Nations, Inuit and non status Indians, groups which share a common heritage.

At enrolment, participants completed a detailed interviewer-administered questionnaire that included questions on socio-demographic characteristics, historical and lifetime traumatic life events, non-injection and injection drug use practices, and sexual vulnerabilities. Aboriginal study coordinators met with participants to explain procedures, seek informed consent and confirm study eligibility. Research confidentiality limitations which include the reporting of communicable diseases in cases of self-harm and child welfare legislation regarding current sexual abuse were explained in detail to all study participants. Follow up interviews are conducted every six months where participants are given the choice to interview with an individual from the research team whom they trust. At each study visit, participants are provided with a twenty dollar stipend to compensate for their time and assist with transportation to the interview site.

At each visit, eligible participants are tested for HIV and HCV antibodies by drawing venous blood samples. Interviewers are kept blind to the HIV and Hepatitis C status of the subjects. All eligible participants have private interviews with trained nurses who provide pre and post-test counseling. Subjects were referred to clinics that provide hepatitis A and B immunization and were requested to return for their HCV serostatus test result at which time referral for HIV/AIDS and hepatitis C care was provided. Participants are provided with an appointment by the research nurse to return for their blood test results upon indicating their desire to do so. Cedar Research Personnel are involved in extensive street based outreach to provide participants with follow up

opportunities with their blood test results and to provide various sources of support requested by the participants. These include and are not limited to access to traditional healing, addiction treatment and secure housing.

## **Measures**

The present study includes all Cedar Project participants who met the following eligibility criteria for this analysis and who returned for at least one follow-up interview during the period between October 2004 and May 2005.

Variables of interest include age, gender, location (Vancouver vs. Prince George), sexual identity (gay/bisexual/lesbian/transgender/queen – GBLTQ - vs. straight), ever having been taken from biological parents into care, having at least one parent who attended residential school, experiencing sexual abuse, attempted suicide, incarceration, survival sex work, and housing (stable vs. unstable). Continuous variables were elicited in reference to the 6 months prior to the interview. Responses for variables that were “unsure/can’t remember” or “refused” were coded as “no” in the analysis. “Unstable housing” was defined as living arrangements that included single-room occupancy hotels, transitional living arrangements (“couch surfing”) and homelessness.

Cedar Project participants were asked if they sometimes, always, or never use condoms in their interviews. In this study, “inconsistent condom use” is defined as never or sometimes using a condom during insertive (vaginal or anal) sex over the past 6 months. “Consistent condom use” was defined as always using a condom during insertive sex. The analysis used three subsamples: women, men and participants who report injection drug use. Individuals who reported not being sexually active in the past six months were categorized with participants who always used condoms. Risk factors of

sexual vulnerability included number of lifetime sexual partners (0-19 partners vs. 20 partners or more), and ever having a sexually transmitted infection. “Sexual abuse” was defined in this study as any type of sexual activity that participants were forced or coerced into (including childhood sexual abuse, molestation, rape, and sexual assault). “Survival sex work” was defined as exchanging money, food, drugs, shelter or clothing for sex.

Drug use variables of interest examined patterns of smoking and injection drug use, overdose experiences, binge drug use and rig sharing. Similar to previous studies conducted among people who use illicit drugs (Schechter et al., 1999; Craib et al., 2003), “frequent drug smoking” and/or injecting was defined as smoking or injecting drugs once or more per day and defined less frequency drug use as using the drug of interest less than daily. “Binge drug use” was defined as periods when participants went on runs or binges with drugs and smoked/injected more frequently than usual. High risk injection variables included needing help injecting, and sharing syringes (rigs).

As factors associated with inconsistent condom use included serial measures for each Cedar Project participant, generalized estimating equations (GEE) modeling for binary outcomes with logit link was used to accommodate the temporal correlation within the subjects. These methods provided standard errors adjusted by multiple follow-ups per person using an exchangeable correlation structure (Diggle et al., 1996). The bivariate analysis for young men and women includes injection drug use variables that were restricted to participants who reported injecting drugs. The multivariate model was fit using an *a priori* defined model building protocol involving adjustment for all variables

at  $p < 0.05$  in bivariate analyses. All statistical analyses were performed using SPSS software version 17.0. All reported  $p$ -values are two-sided.

### 3.3 Results

Of the 605 participants recruited from October 2003 thru July 2007, 292 (48%) were female and 313 (52%) were male. The median age of participants was 23.4 years (Interquartile range - IQR: 20.5-26.8). In total, 456 (75.4%) participants completed at least one of the first five follow-up surveys with a median number of follow-up visits being 3 (IQR: 2-4). The rate of inconsistent use varied from 48% to 53% over among women, 36% to 42% among men, and 38% to 49% among people who reported injecting drugs (Figure 3.1).

Results from the bivariate GEE analysis for female Cedar participants are listed in Table 3.1. Among young women, living in Prince George, not being single, unstable housing in the past 6 months, ever having an STI, ever being sexually abused, having been sexually abused in the past 6 months, smoking crack daily, needing help injecting, and sharing rigs were associated with inconsistent condom use. In multivariate analysis for women (Table 3.4), the significant risk factors predicting inconsistent condom use over time included living in Prince George (Adjusted odds ratio [OR]:1.54, 95% Confidence Interval [CI]: 1.06, 2.24), not being single (AOR: 3.81, 95%CI: 2.80, 5.17), ever having an STI (AOR: 1.75, 95%CI:1.22, 2.51), smoking crack daily (AOR: 1.67, 95%CI: 1.04, 2.69), and having been sexually abused in the past 6 months (AOR: 2.02, 95%CI: 1.16, 3.49.).

Table 3.2 summarizes the bivariate GEE analysis for male participants. Living in Prince George, not being single, being younger, ever having an STI, smoking crack

daily, smoking heroin daily, and taking sleeping pills daily were associated with increased likelihood for inconsistent condom use. Young men who reported injection drug use and whom shared rigs were marginally more likely to use condoms inconsistently. Identifying as gay/bisexual/transgendered/queer (GBLTQ), having been taken away from biological parents, having unstable housing in the past 6 months, and being involved in survival sex work were variables associated with decreased risk for inconsistent condom use. Young men who reported injection drug use and who injected crystal methamphetamine, heroin and opiates daily were also less likely to use condoms inconsistently. In multivariate analysis for young men (Table 3.5), living in Prince George (AOR: 1.69, 95%CI: 1.15, 2.29), not being single (AOR: 8.19, 95%CI: 5.59, 12.01), ever having an STI (AOR: 1.71, 95%CI: 1.14, 2.57), and smoking crack on a daily basis (AOR: 1.55, 95%CI: 1.01, 2.36) were predictors of inconsistent condom use over time. Identifying as gay, bisexual, transgendered or queer served marginally protective for using condoms inconsistently (AOR: 0.37, 95%CI: 0.12, 1.09).

Results from the bivariate GEE analysis for the Cedar participants who report injection drug use are listed in Table 3.3. Living in Prince George, not being single, unstable housing in the past 6 months, ever having an STI, ever having been sexually abused, smoking crack daily, smoking heroin daily, injecting morphine daily, needing help injecting in the past 6 months, sharing rigs in the past 6 months and overdosing in the past 6 months were associated with inconsistent condom use. In multivariate analysis for participants who reported injection drug use (table 3.6), living in Prince George (AOR]:1.51, 95%CI: 1.01, 2.25), not being single (AOR: 5.10, 95%CI: 3.68, 7.07), ever having an STI (AOR: 1.51, 95%CI: 1.05, 2.19), smoking crack daily (AOR: 1.63, 95%

CI: 1.05, 2.51) and rig sharing (AOR: 1.78, 95%CI: 1.26, 2.52) were significant independent predictors of inconsistent condom use over time. Needing help injecting in the past 6 months was marginally significant (AOR: 1.39, 95% CI: 0.98, 1.98).

### **3.4 Discussion**

Our examination of sexual vulnerability as measured by the inconsistent use of condoms over time, among a prospective cohort of young Aboriginal people who use drugs in two Canadian cities reveals troubling findings. In our study, all participants were significantly less likely to use condoms if they were not single. Using condoms less frequently with steady partners compared to casual ones has been identified as a common trend among all subgroups of the general population (Misovich et al., 1997). For all participants, living in Prince George, ever having an STI, and smoking crack on a daily basis were associated with inconsistent condom use over time. The young women of our study who were forced to have sex in the past six months were more likely to report inconsistent condom use over time. The young men and women who reported injection drug use and who shared rigs in the past six months were also more likely to use condoms inconsistently over time.

Young people who smoked crack on a daily basis were approximately 1.6 times more likely to inconsistently use condoms. Crack use in the U.S has been associated with the sexual transmission of HIV and other STIs (Sterk et al. 1988; Fullilove et al. 1990; Chaisson et al. 1991; Chirgwin et al. 1991; Centers for Disease Control and Prevention, CDC, 1988; Schultz et al., 1992). Smoking crack has been linked to having multiple sex partners (Weatherby et al., 1994; Khalsa et al., 1994); engaging in survival sex work (Irwin et al., 1991; Fullilove et al. 1990; Kuyper et al., 2005); increasing sexual activity

(Weatherby et al., 1992) and likelihood of having unprotected sex (Inciardi et al. 1992; Booth et al., 1993; Falck et al. 1997). Of particular importance, a study of men and women in three large urban U.S cities equated the risk for HIV transmission among women who smoke crack and exchange sex for money or drugs to that of men who have having unprotected sex with men (Edlin et al., 1994). As Aboriginal people are overrepresented among women who engage in survival sex work in Canada (Mehrabadi, et al. 2008), such findings warrant concern for Aboriginal communities. In Mehrabadi et al.'s 2008 study involving young Cedar women, participants who are involved in survival sex work are more likely to report crack use, and sexual abuse was independently associated with sex work. Spittal et al. (2003) notes that in addition to lower levels of condom use among women involved in survival sex work who use crack, there also exists the danger of transmitting HIV during oral sex due to the presence of oral lesions and burns caused by crack pipes.

In our study, sharing rigs was an independent predictor of inconsistent condom use. Inconsistent condom use among people who use injection drugs at a Vancouver Safe Injection Site Facility in Vancouver was associated with syringe borrowing and lending (Marshall et al. 2008). The high correlation between sharing needles with sexual partners and condom use inconsistencies have been noted (Burt et al., 2006). As such, safe injection sites may be an important location to develop sexual health programming and information.

In multivariate analysis, having ever had an STI was significantly associated with inconsistent condom use for men, women and participants who reported injecting drugs. The association of having an STI and irregular condom use (Siegal et al. 1996; CDC,

1993) along with the health disparities among Aboriginal people in areas concerning adolescent sexual health issues have been recognized (Health Canada, 2001). As the majority of sexually transmitted diseases are identified during surveillance and less as a result of symptoms, there are concerns for the number of people who are not being treated for many life threatening yet curable diseases. Researchers have stated that complex sociocultural factors may prevent the receipt of regular check ups, making this overrepresentation of Aboriginal people among patients with STIs an underestimation of the true scope of the problem (Bowden et al. 1999). Still, there is a large paucity of data concerning the STI risks of Aboriginal young people in this country. Furthermore, there is very little information on patterns of sexual vulnerability and determinants of contracting STIs and the use of condoms over time that is specific to Aboriginal people. The majority of recent Canadian studies demonstrate that Aboriginal ethnicity is associated with increased risk for having an STI (De et al. 2003; Ogilvie et al. 2009; Shields et al. 2004; Yacoub et al. 2005), but fail to investigate the lifetime and background vulnerabilities of Aboriginal people that is resulting in this increased susceptibility.

With the increased risks that Aboriginal people face for STIs, shockingly, there is an additional paucity of information that explores the role of STIs in HIV infection among young Aboriginal people in Canada. Sexually transmitted infections that lead to genital ulcers and/or discharge increase the risk of acquiring HIV (CDC, 1998). STIs may play a role in increasing both susceptibility to HIV and the infectiousness of the virus (Galvin & Cohen, 2004). Studies have demonstrated a significant transmission factor of HIV infection is the presence of an STI, notably syphilis and herpes (Pilcher et al. 2003;



Scott et al., 1988; Walter et al., 1988; Freeman et al., 2006). Global literature has identified a significant reduction of HIV infections in populations that have STI control (Grosskurth et al. 1995) and have suggested that STI management on an individual level is important to reduce HIV transmission (Gray et al. 1999; Galvin & Cohen, 2004; Flemming & Wasserheit, 1999) and infectiousness (Ghys et al., 1997). Yet, this problem has never been studied among Aboriginal people in Canada and requires immediate attention.

We find it highly alarming that women who are victims of recent sexual abuse were twice as likely to use condoms inconsistently compared to women who were not. Significant issues preventing Aboriginal women from engaging in safe sex have included the perceived effects of alcohol abuse, infidelity, sexual abuse and stigma surrounding STIs (Stark and Hope, 1997). Men and women play different power roles in intimate encounters, and the capability of a woman to negotiate safe sex and condom use becomes imbalanced (Amaro, 1995; Felmlee, 1994; Wingood *et al.*, 1998) and constrains attempts to reduce sexual risk. Studies assessing this reality demonstrate that women with highly perceived power roles use condoms more regularly than women with low power roles in their intimate relationships (Pulerwitz et al. 2002).

Health vulnerabilities are directly associated with having a history of sexual abuse that results in negative mental health sequelae and reduced empowerment (Orcutt et al., 2005) and are not solely limited to increased risk for STIs. Almost half of Cedar participants have been sexually abused, 69% of which were female. Pearce, Christian, Patterson et al. (2008) reported that Cedar participants who had been sexually abused were more likely to be on the streets for more than three nights, ever self-harm, have

ideated and attempted suicide, been diagnosed with mental illness, been in the emergency department within the 6 months prior to baseline, have had over 20 lifetime sexual partners, been involved in survival sex work and have ever overdosed. The same study also reported a very small proportion of young women with a history of sexual abuse use condoms. Sexual abuse can put the victims at increased lifetime risk for physical and emotional abuse, drug dependence, re-victimization, homelessness; and shame; factors that can have direct impact sexual vulnerability such as engaging in survival sex work, poverty and reduced ability to negotiate sexual preferences (McEvoy & Daniluk, 1995), all of which can increase vulnerability to HIV infection (Evans-Campbell et al. 2006).

All participants who live in Prince George were significantly more likely to use condoms inconsistently. Although the Vancouver Downtown Eastside has been noted as a unique epicenter of poverty, survival sex work, drug use and vulnerability to disease (Benoit et al., 2003), we find it very concerning that the Prince George participants are at even higher risk for sexual vulnerability compared to participants in Vancouver. The vulnerabilities of participants in Prince George are not limited to the consequential risks of inconsistent condom use. When comparing sexual health vulnerabilities among the young women in Prince George and Vancouver, both cities had relatively equal rates of survival sex work. This finding highlights the specific needs of young women in Prince George, where services and resources for sex work survivors are lacking (Mehrabadi et al. 2008). Service providers from Prince George and Northern Health Authority have consistently shared their concerns regarding a surge in new HIV infections. The majority of clients who access the Prince George Needle Exchange and AIDS Prince George are Aboriginal people; yet, health services are not adequately present to care for families in

communities in these rural regions. In Prince George, AIDS Service organizations lack sufficient access to clean needles on reserve. Young Aboriginal people who use drugs in Prince George have also been found to experience more difficulties accessing or utilizing harm reduction services compared to participants in Vancouver (Craib et al. 2005). Prince George participants were also significantly more likely to borrow syringes and encounter difficulty accessing new or clean syringes (Spittal, Craib, Teegee et al. 2007) which also was a significant predictor of inconsistent condom use. Furthermore, while the majority of HIV positive cases were in Vancouver, incidence of HIV is more rapid in Prince George since the inception of the study.

### **Limitations and conclusions**

Our study is limited by recall and social desirability bias due to the nature of the self-reported data used. Furthermore, the findings cannot be generalized to all Aboriginal young people, as the sampling methodology is non-random and through outreach and is limited to participants who use drugs. Therefore, we are limited by non-response bias and the possible exclusion of hard to reach and marginalized individuals who were not captured. Further, we cannot determine causation in this study due to the issue of temporality between lifetime traumatic experiences and vulnerability to various drug use and sexual outcomes. Additionally, many of the trauma variables are highly correlated, and over-controlling must be kept in mind when interpreting the significance of these variables in multivariate modeling.

The issue of loss to follow up is also of importance as stark differences between individuals who come back for interviews and those who do not may exist, with direct

consequences for our findings. Indeed, if we are losing our most marginalized participants during the follow up process, the findings for sexual vulnerability may be even more concerning than what is established. It is therefore important to conduct further research into sexual risk variations among participants who have continually returned to work with the Cedar Project, and those who have not. Furthermore, we do not know what specific STIs the participants have contracted, leaving an immediate need for future investigation into various STI rates within this cohort to examine susceptibility to infection overtime, along with the association of having an untreated STI and risk for seroconverting to HIV.

In conclusion, our analyses of the findings show that recent sexual abuse is a predictor of inconsistent condom use. Although we do not know the severity or frequency of the sexual abuse, and whether condoms were used during the incidents, it is safe to conclude that these participants face increased risk of contracting HIV. The harms of smoking crack are a continuous impediment to the young Aboriginal people of our study and further investigation into risk factors for smoking and injecting crack is needed. We see that inconsistent condom use is associated with having STIs, which increase susceptibility to HIV and other negative health and social outcomes. Such findings highlight the necessity to prioritize an examination of the availability and effectiveness of current services in both rural and urban localities. The success of any initiative to combat the crippling health disparities experienced by Aboriginal communities requires the design of culturally safe prevention, treatment, and harm reduction programs. Young people need to be meaningfully involved with the development of such programs. With significant increases in resources, acknowledging the intergenerational trauma related to

the residential school system may be one way that Aboriginal leadership, addiction specialists and other practitioners can begin to mitigate the potential impact of the HIV epidemic currently threatening Aboriginal communities.

**Table 3.1: Bivariate GEE analysis of factors associated with inconsistent condom use among the young women of the Cedar Project**

Variable	Unadjusted GEE	95% CI	p-value
<b>Location Prince George</b>	<b>1.37</b>	<b>0.98, 19.19</b>	<b>0.06</b>
Age	0.99	0.95, 1.03	0.50
<b>Martial status not single</b>	<b>3.01</b>	<b>2.30, 3.94</b>	<b>&lt;0.001</b>
Sexual identity GBLTQ	0.89	0.58, 1.37	0.59
Education <10	0.79	0.54, 1.14	0.21
Ever taken from parents	1.27	0.87, 1.85	0.22
Any parent attend residential school	0.99	0.70, 1.38	0.93
Ever on the streets for >3 nights	1.20	0.94, 1.53	0.14
<b>Unstable housing past 6 months</b>	<b>0.78</b>	<b>0.61, 1.00</b>	<b>0.05</b>
<b>Ever attempt suicide</b>	<b>1.39</b>	<b>0.98, 1.95</b>	<b>0.06</b>
Ever diagnosed with mental illness	1.23	0.83, 1.81	0.30
Lifetime number of sexual partners >20	1.05	0.74, 1.50	0.79
Ever involved in survival sex work	1.11	0.70, 1.48	0.93
Survival sex past 6 months	1.201	0.92, 1.59	0.18
<b>Ever had STI</b>	<b>1.57</b>	<b>1.12, 2.19</b>	<b>0.01</b>
Ever sexually abused	1.46	1.00, 2.12	0.05
<b>Forced sex past 6 months</b>	<b>1.76</b>	<b>1.09, 2.83</b>	<b>0.02</b>
Smoke cocaine past 6 months	0.98	0.76, 1.26	0.87
Smoke crack past 6 months	1.22	0.84, 1.78	0.31
Smoke opiates past 6 months	1.11	0.77, 1.60	0.35
Smoke heroin past 6 months	1.11	0.77, 1.60	0.58
Smoke crystal past 6 months	1.04	0.70, 1.55	0.84
<b>Smoke crack daily</b>	<b>1.46</b>	<b>0.98, 2.19</b>	<b>0.07</b>
IV heroin past 6 months*	0.87	0.60, 1.26	0.46
Daily heroin injection*	1.09	0.82, 1.45	0.57
IV cocaine past 6 months*	1.12	0.85, 1.46	0.43
Daily cocaine injection*	0.96	0.74, 1.25	0.76
IV opiate past 6 months*	0.81	0.57, 1.16	0.25
Daily opiate injection*	1.17	0.86, 1.58	0.32
IV Crystal past 6 months*	1.57	0.93, 2.64	0.09
Daily crystal injection*	0.96	0.77, 1.21	0.74
<b>Need help injecting past 6 months*</b>	<b>1.98</b>	<b>1.37, 2.86</b>	<b>&lt;0.001</b>
<b>Rig sharing past 6 months*</b>	<b>2.14</b>	<b>1.42, 3.22</b>	<b>&lt;0.001</b>
Overdose past 6 months	1.35	0.90, 2.02	0.15
Use drugs while in jail past 6 months	0.96	0.49, 1.88	0.90
Currently in drug/alcohol treatment program	1.08	0.83, 1.40	0.59
Ever been in methadone treatment program	0.89	0.63, 1.27	0.53
Currently in methadone treatment program	1.18	0.76, 1.83	0.47

\*Restricted to women who reported injection drug use

**Table 3.2: Bivariate GEE analysis of factors associated with inconsistent condom use among the young men of the Cedar Project**

<b>Variable</b>	<b>Unadjusted GEE</b>	<b>95% CI</b>	<b>p-value</b>
<b>Location Prince George</b>	<b>1.68</b>	<b>1.18, 2.41</b>	<b>0.01</b>
<b>Age</b>	<b>1.05</b>	<b>1.01, 1.10</b>	<b>0.02</b>
<b>Martial Status not single</b>	<b>5.30</b>	<b>3.83, 7.32</b>	<b>&lt;0.001</b>
<b>Sexual identity GBLTQ</b>	<b>0.23</b>	<b>0.10, 0.52</b>	<b>&lt;0.001</b>
Education <10	1.30	0.87, 1.95	0.20
<b>Ever taken from parents</b>	<b>0.66</b>	<b>0.46, 0.95</b>	<b>0.03</b>
Any parent attend residential school	0.93	0.65, 1.33	0.68
Ever on the streets for >3 nights	0.89	0.77, 1.26	0.89
<b>Unstable housing past 6 months</b>	<b>0.75</b>	<b>0.57, 0.99</b>	<b>0.04</b>
Ever thought of committing suicide	1.12	0.78, 1.61	0.54
Ever attempt suicide	0.91	0.62, 1.34	0.63
Ever diagnosed with mental illness	0.86	0.59, 1.26	0.43
Lifetime number of sexual partners >20	1.34	0.93, 1.94	0.11
<b>Ever involved in survival sex work</b>	<b>0.57</b>	<b>0.34, 0.96</b>	<b>0.04</b>
Survival sex past 6 months	0.64	0.63, 1.05	0.07
<b>Ever had STI</b>	<b>2.15</b>	<b>1.46, 3.16</b>	<b>&lt;0.001</b>
Ever sexually abused	1.18	0.80, 1.73	0.40
Forced sex past 6 months	1.47	0.79, 2.73	0.23
Smoke cocaine past 6 months	1.07	0.83, 1.39	0.59
Smoke opiates past 6 months	1.60	0.92, 2.76	0.09
Smoke crystal past 6 months	1.05	0.81, 1.36	0.72
<b>Smoke crack daily</b>	<b>1.37</b>	<b>1.01, 1.85</b>	<b>0.04</b>
<b>Take sleeping pills daily</b>	<b>1.91</b>	<b>1.33, 2.75</b>	<b>&lt;0.001</b>
<b>Smoke heroin daily</b>	<b>1.51</b>	<b>1.02, 2.24</b>	<b>0.04</b>
<b>IV heroin past 6 months*</b>	<b>0.77</b>	<b>0.64, 0.92</b>	<b>0.05</b>
<b>Daily heroin injection*</b>	<b>0.55</b>	<b>0.39, 0.79</b>	<b>0.001</b>
IV cocaine past 6 months*	1.55	0.92, 2.60	0.09
Daily cocaine injection*	1.12	0.68, 2.05	0.57
IV opiate past 6 months*	0.89	0.69, 1.14	0.34
<b>Daily opiate injection*</b>	<b>0.59</b>	<b>0.43, 0.82</b>	<b>0.001</b>
<b>IV Crystal past 6 months*</b>	<b>0.60</b>	<b>0.39, 0.92</b>	<b>0.02</b>
<b>Daily crystal injection*</b>	<b>0.56</b>	<b>0.37, 0.86</b>	<b>0.01</b>
Need help injecting past 6 months*	1.40	0.91, 2.16	0.13
<b>Rig sharing past 6 months*</b>	<b>1.34</b>	<b>0.98, 1.94</b>	<b>0.07</b>
Overdose past 6 months	1.18	0.65, 2.13	0.58
Incarcerated past 6 months	0.91	0.71, 1.17	0.46
Currently in drug/alcohol treatment program	1.18	0.90, 1.54	0.24
Ever been in methadone treatment program	1.10	0.62, 1.9	0.74
Currently in methadone treatment program	0.93	0.47, 1.86	0.84

\*Restricted to men who reported injection drug

**Table 3.3: Bivariate GEE analysis of factors associated with inconsistent condom use among Cedar Project participants who use injection drugs**

<b>Variable</b>	<b>Unadjusted GEE</b>	<b>95% CI</b>	<b>p-value</b>
<b>Location Prince George</b>	<b>1.83</b>	<b>1.30, 2.59</b>	<b>0.001</b>
Male gender	1.25	0.88, 1.77	0.22
Age	0.96	0.92, 1.01	0.10
<b>Marital status not single</b>	<b>4.35</b>	<b>3.29, 5.75</b>	<b>&lt;0.001</b>
Sexual identity GBLTQ	0.71	0.43, 1.16	0.17
Education >10	0.73	0.50, 1.06	0.10
Ever taken from parents	0.38	0.82, 1.69	0.38
Any parent attend residential school	0.88	0.63, 1.25	0.48
Ever on the streets for >3 nights	0.99	0.78, 1.27	0.96
<b>Unstable housing past 6 months</b>	<b>0.65</b>	<b>0.49, 0.85</b>	<b>0.002</b>
Ever attempt suicide	1.32	0.93, 1.88	0.12
Ever diagnosed with mental illness	1.27	0.88, 1.86	0.21
Lifetime number of sexual partners >20	1.20	0.84, 1.72	0.31
Ever involved in survival sex work	0.93	0.65, 1.31	0.66
Survival sex past 6 months	1.04	0.79, 1.38	0.78
<b>Ever had STI</b>	<b>1.55</b>	<b>1.10, 2.19</b>	<b>0.01</b>
<b>Ever sexually abused</b>	<b>1.53</b>	<b>1.08, 2.18</b>	<b>0.02</b>
Sexually abused past 6 months	1.37	0.82, 2.31	0.23
Smoke cocaine past 6 months	1.00	0.77, 1.31	0.99
<b>Smoke crack past 6 months</b>	<b>1.68</b>	<b>1.18, 2.39</b>	<b>0.004</b>
Smoke opiates past 6 months	1.25	0.85, 1.85	0.26
Smoke crystal past 6 months	1.28	0.95, 1.74	0.11
<b>Smoke crack daily</b>	<b>1.67</b>	<b>1.11, 2.53</b>	<b>0.01</b>
<b>Smoke heroin daily</b>	<b>1.71</b>	<b>1.16, 2.51</b>	<b>0.01</b>
Binge with injection drugs past 6 months	0.99	0.66, 1.22	0.49
IV heroin past 6 months	0.86	0.66, 1.12	0.27
IV cocaine past 6 months	1.14	0.89, 1.45	0.30
IV speedball past 6 months	0.84	0.60, 1.16	0.28
IV morphine past 6 months	1.26	0.91, 1.73	0.16
IV crystal past 6 months	0.99	0.71, 1.38	0.97
IV diludin past 6 months	1.17	0.84, 1.64	0.34
IV opiates past 6 months	0.92	0.71, 1.20	0.54
<b>Inject morphine daily</b>	<b>1.44</b>	<b>1.00, 2.07</b>	<b>0.05</b>
<b>Need help injecting past 6 months</b>	<b>1.51</b>	<b>1.13, 2.04</b>	<b>0.01</b>
<b>Rig sharing past 6 months</b>	<b>2.07</b>	<b>1.55, 2.78</b>	<b>&lt;0.001</b>
<b>Overdose past 6 months</b>	<b>1.57</b>	<b>1.07, 2.31</b>	<b>0.02</b>
Currently in drug/alcohol treatment program	1.21	0.91, 1.62	0.18
Ever been in methadone treatment program	0.89	0.62, 1.28	0.54
Currently in methadone treatment program	1.27	0.82, 1.95	0.28



**Table 3.4: Multivariate GEE analysis of factors associated with inconsistent condom use among the young women of the Cedar Project**

Variable	Adjusted GEE	95% CI	p-value
<b>Prince George</b>	<b>1.54</b>	<b>1.06, 2.24</b>	<b>0.02</b>
Age	0.99	0.95, 1.04	0.75
<b>Not single</b>	<b>3.81</b>	<b>2.80, 5.17</b>	<b>&lt;0.001</b>
Unstable housing past 6 months	0.88	0.66, 1.18	0.39
Ever attempt suicide	1.20	0.84, 1.70	0.32
<b>Ever had STI</b>	<b>1.75</b>	<b>1.22, 2.51</b>	<b>0.002</b>
<b>Sexually abused past 6 months</b>	<b>2.02</b>	<b>1.16, 3.49</b>	<b>0.01</b>
<b>Smoke crack daily</b>	<b>1.67</b>	<b>1.04, 2.69</b>	<b>0.04</b>

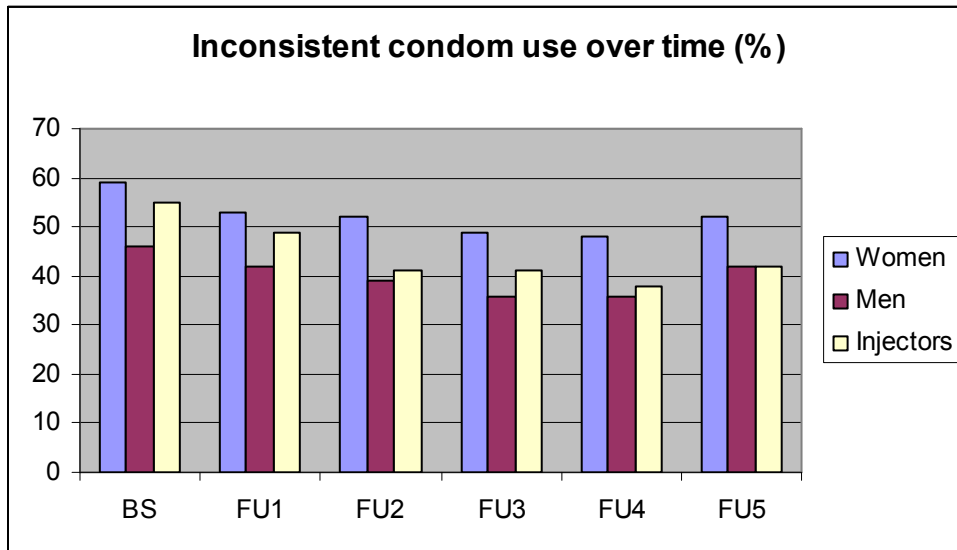
**Table 3.5: Multivariate GEE analysis of factors associated with inconsistent condom use among the young men of the Cedar Project**

Variable	Adjusted GEE	95% CI	p-value
<b>Prince George</b>	<b>1.69</b>	<b>1.15, 2.49</b>	<b>0.01</b>
Age	1.11	0.97, 1.07	0.47
<b>Not single</b>	<b>8.19</b>	<b>5.59, 12.01</b>	<b>&lt;0.001</b>
GBLTQ	0.37	0.12, 1.01	0.07
Ever taken from parents	1.30	0.88, 1.93	0.19
Unstable housing past 6 months	0.86	0.63, 1.19	0.36
Ever involved in survival sex work	0.71	0.37, 1.39	0.32
<b>Ever had STI</b>	<b>1.71</b>	<b>1.14, 2.57</b>	<b>0.01</b>
<b>Smoke crack daily</b>	<b>1.55</b>	<b>1.01, 2.37</b>	<b>0.04</b>
Smoke heroin daily	1.17	0.54, 2.54	0.69

**Table 3.6: Multivariate GEE analysis of factors associated with inconsistent condom use among Cedar Project participants who use injection drugs**

Variable	Adjusted GEE	95% CI	p-value
<b>Prince George</b>	<b>1.51</b>	<b>1.01, 2.25</b>	<b>0.04</b>
Gender	0.80	0.53, 1.18	0.24
Age	0.96	0.92, 1.10	0.15
<b>Not single</b>	<b>5.10</b>	<b>3.68, 7.07</b>	<b>&lt;0.001</b>
Unstable housing past 6 months	0.82	0.59, 1.12	0.21
<b>Ever had STI</b>	<b>1.51</b>	<b>1.05, 2.19</b>	<b>0.03</b>
Ever sexually abused	1.36	0.92, 2.01	0.13
<b>Daily crack smoking</b>	<b>1.63</b>	<b>1.05, 2.51</b>	<b>0.03</b>
Inject morphine daily	0.78	0.46, 1.27	0.30
Need help injecting past 6 months	1.39	0.98, 1.98	0.07
<b>Rig sharing past 6 months</b>	<b>1.78</b>	<b>1.26, 2.52</b>	<b>0.001</b>
Overdose past 6 months	1.24	0.79, 1.96	0.35

**Figure 3.1: Variations in inconsistent condom use among Cedar participants from Follow up (FU) 1 through 5.**



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## **CHAPTER 4: GENERAL DISCUSSION AND CONCLUSIONS**

### **4.1 Summary of key findings**

The purpose of this study was to explore the sexual vulnerabilities of a cohort of Aboriginal young people who use drugs in two British Columbian cities, as measured by the inconsistent use of condoms. We found that 59% of our young women, and 41% of our young men were using condoms inconsistently, a difference that was statistically significant. After adjusting for significant univariate predictors, relationship status was predictable for inconsistent condom use for the entire cohort, both at baseline and overtime.

Of importance and concern, young women who had a history of sexual abuse, were 1.8 times more likely use condoms inconsistently during insertive sex at baseline, and twice as likely to not use condom consistently overtime. At baseline, young women who had ever been in a drug or alcohol treatment program were almost twice as likely to use condoms inconsistently, yet those women who had ever been in a methadone treatment program (MMT) were more likely to use condoms consistently. We must interpret this finding with caution as the majority of women in the Cedar project who access MMT and are involved in survival sex work, which is associated with increased condom use.

Young men who reported being gay, transgendered, bisexual or queer were more likely to use condoms consistently at baseline. However, the young men of our study who

had more than 20 lifetime sexual partners were twice as likely to use condoms inconsistently. Among our participants who use injection drugs, HIV positivity was associated with consistent condom use.

Our prospective analysis demonstrated that smoking crack was associated with an increased likelihood of inconsistent condom use for the young women and men by 1.7 and 1.5 times respectively. Furthermore, all participants who reported having an STI, were more likely to not use condoms inconsistently over time (1.8 times for women, 1.7 times for men, and 1.5 times for those who inject drugs). Living in Prince George was significantly associated with inconsistent condom use over time (1.5 times for women, 1.7 times for men, and 1.6 times for those who inject drugs). Among participants who inject drugs, inconsistent condom use was twice as high among people who smoked heroin frequently and 1.7 times higher among those who shared rigs.

#### **4.1 Conclusions**

Sexual health programs focus on the dynamics of consensual encounters of sex and often fail to address the consequences of childhood sexual abuse, the prevalence of violence in relationships, and empowered decision-making abilities during sex (Amaro, 1995; Craib et al., 2003; Wyatt et al., 2002). It is very important for intervention planning to address trauma and gendered power dynamics. In our study, sexual abuse survivors were twice as likely to not engage in protective insertive sex compared to those who did not report any sexual abuse. The associations reported here strongly suggest that mental health and continued exposure to sexual risk are the mediators that increase risks for STIs. Most epidemiologic models addressing the predictors of STI and HIV infection are not situating the sexual health vulnerabilities of young Aboriginal people living in

Canada within their postcolonial realities (Adelson, 2005) and can not truly meet their aims at curbing this epidemic without this consideration.

Sexual abuse is a predictor of negative health outcomes among Cedar participants (Pearce, et al. 2008) and the concerning disproportion of Aboriginal representation in HIV (Wesley-Esquimaux & Smolewski, 2004; Barton et al. 2005). Albarracin et al., (2003) examined 354 HIV prevention initiatives and suggested that intervention strategies must be unique to the specific population instead of taking a homogenous approach.

We are also finding sexual health risks that are directly linked to frequent crack use. Women who have been in drug or alcohol treatment programs are also at high risk. These findings call for resources to support community-based addiction programs that are built on Aboriginal healing strategies (Spittal et al., 2007). Aboriginal people subject to the sexual and drug related vulnerabilities of trauma require programming that will enhance their sexual negotiation abilities and sexual health. HIV prevention programs and policies must be strengthened and developed by considering the psychological consequences of imposed sexual activity that has roots in historical trauma (Walters & Simoni, 1999).

## **4.2 Relevance of findings**

The findings of this study are unique, as no cohort study in Canada has specifically examined the lifetime traumatic experiences of Aboriginal young people who are vulnerable to illicit drug use. We know that Aboriginal people in Canada continually faced disproportionate health disparities. It is through culturally competent work like the Cedar Project, where quantitative evidence shapes qualitative realities and the Aboriginal

representation of the Project, along with their communities, can meaningfully use the findings to advocate for efficient policy and programming.

With respect to hypotheses 1.1 and 2.1, we stated that the Cedar Project participants who do not use condoms consistently at baseline and overtime would be more likely to have experienced more lifetime trauma, such as sexual abuse. Both hypotheses were supported as young women of our cohort who have been sexually abused did not report using condoms consistently during insertive sex. We found stark figures in what proportion of participants had ever been sexually abused, where almost one third of young men and over two-thirds of young women reporting a history of sexual abuse. The consequences of sexual abuse, such as suicide, revictimization, and being at risk for sexual vulnerabilities cannot be the only available options (Joseph, 1995). Comprehensive strategies are required to intervene, treat, and prevent the cycle of abuse. One intervention strategy is to create public awareness, especially at the community level, to identify and respond to survivors. ‘Culture as intervention’ and intervention programming built upon histories of resilience and resistance are critical (Duran & Walters, 2004; Majumdar et al. 2004). Rigorous efforts to break silence and overcome the shame from the cycle of abuse, addiction, and coping with trauma are required by Aboriginal leadership in Canada (Ross, 2006).

Hypothesis 1.2 suggested that people who do not use condoms consistently are also more likely to exhibit risk behavior with respect to other sexual practices and drug use patterns. We did see that among the young men, having more than twenty lifetime sexual partners was associated with inconsistent condom use, bearing serious implications for risk of transmitting and acquiring STIs. An important component of



sexual risk reduction interventions involve condom use, but explanatory models for condom use demonstrate important ethno-gender differences when predicting how condoms are utilized (Devries et al., 2008). Myers et al. (1999) attributed low rates of condom use among the Aboriginal participants of their study to cultural norms and values not allowing candid sexual discussion, as some Aboriginal languages do not even have a term for “sex”. Furthermore, the Eurocentric educational tools of displaying of superior knowledge through direct advice, persuasion and instruction may be less favorable in the culture of Aboriginal people living in Canada (Myers et al. 1999; Pauktuutit Inuit Women of Canada, 2006). Forced assimilation resulted in the erosion of cultural principles that mediate vulnerability and preventative values (Simoni et al. 2004; Chester et al., 1994). Coupled with rampant sexual abuse that was pervasive in the schools, the development of healthy notions of sexuality was hindered (Fournier & Crey, 1997, p.129). The difficulty of addressing matters of sex and sexuality in Aboriginal communities is due to the lack of sexual education in Aboriginal homes and communities rooted in the legacies of the residential schools. This silence is obstructing the transmission of knowledge from adults to children, leaving many young people to learn about sex by their own exploration, through the media, from misguided peers, and from their abusers (LaRocque, 1994, p. 80). As sexually transmitted infections increased susceptibility to HIV infection, it is very important to develop culturally safe preventive measures taken by Aboriginal communities in conjunction health professionals to counter the overrepresentation of Aboriginal people among patients with STIs.

Of note, researchers have noted condom accessibility to be a difficult in remote and tightly knit Aboriginal communities (Larkin et al. 2007; Smith, 1999). Even when

access is not an issue, condoms need to be accepted. One of the main challenges to sexual health education are the sensitivities associated with being sexually explicit in culturally safe ways. Effective programming depends on who is delivering the messages, and the receptivity of the audience based on their past sexual experiences, knowledge, and feelings around sexual matters. Community surveys report the availability of posters and pamphlets for private review as a preferred method of knowledge transfer between healthcare workers and community members. (Smith, 1999) Qualitative studies have noted pregnancy and fertility to be a traditional value for the Aboriginal community (Devries 2007; Roberts & Cahill, 1997). The experiences of historical trauma have influenced ideologies around gender and sexuality, and supersede the ability to openly discuss and intervene in sexual health. Therefore, any attempt to implement safe sex technologies requires sensitivity towards how the gendered self's understandings of sexuality are developed (Willis, 2003).

Hypothesis 2.2 stated that frequent crack use would be associated with inconsistent condom use as previous literature has indicated an association between this drug and risky sexual behaviour (Weatherby et al., 1994; Khalsa et al., 1994; Hoffman et al., 2000; Tortu et al., 2000; Booth et al., 1993). Indeed, our hypothesis was supported as frequent crack smoking over time was significantly associated with inconsistent condom use among men, women and people who use injection drugs in our study. Furthermore, we are seeing that involvement with drug and alcohol treatment programs are impacting sexual risk. Cedar participants and Aboriginal people have very little access to safe and effective treatment, and we need to identify barriers to accessing existing addiction treatment for young Aboriginal people who use drugs. We know that accessing and

remaining on MMT is effective in reducing sexual risk, but access is so low within our cohort that we are not even able to conduct prospective analyses for Cedar participants who are accessing this treatment. (Spittal, et al. 2007) What is required is low-threshold primary mental health and addiction services provided by culturally sensitive in-reach staff, and programming based on Indigenous strategies for healing from lifetime and historical trauma specific to the needs of young Aboriginal people who use drugs. Harm-reduction education and services in safe urban spaces for young Aboriginal people who use drugs are necessary to prevent and treat the dire health consequences of crack use. Moreover, the young people for whom these services should be designed must be meaningfully involved in the development of programming aimed to meet their needs.

While the sexual abuse that started from the residential schools and trickled down into subsequent generations of Aboriginal people was inescapable, today Aboriginal leadership is demanding that the cycles of abuse are stopped (Christian & Spittal, 2008). Aboriginal Leadership, chief and council, community based health representatives, addiction specialists, crown attorneys, and the RCMP must increase and support resources that are historically responsible, and aim to heal the effects of multigenerational trauma (Ross, 2006). Culturally safe sexual health and addiction programs must be designed for all victims of abuse, including offenders, and their families in order to overcome the cycle of pain that continues to impact the Aboriginal communities of Canada (Aboriginal Peoples Collection, 1997; Fournier & Crey, 1997; Ross, 2006).

### **4.3 Strengths and limitations**

The Cedar Project is a unique study of its kind in North America as it is composed entirely of Aboriginal participants who are surviving drug use. As such, the Project

allows research to be conducted that is specific to Aboriginal people and free from confounding differences due to ethnicity. As previously mentioned, empirical analyses focused on the sexual vulnerabilities of Aboriginal people within a socio-historic framework are scarce in Canada; the Cedar Project makes the evaluation of such vulnerabilities within a culturally and historically relevant lens possible. The Cedar Project makes the realities of Aboriginal health disparities, that have been well known on a qualitative level to Aboriginal people and communities, quantifiable for research integrity.

The multifaceted factors that have led to the current state of Aboriginal health concerns in Canada cannot be understood without exposing the layers of deep political and social impacts of historic misconduct, and the consequences of forced assimilation. The Cedar Project is committed to assessing the traumatic and lifetime experiences of Aboriginal young people who have experienced the legacy of the residential and child welfare systems when explaining any health outcome. Such an approach makes this Project invaluable to understanding the difficulties faced by Aboriginal people as a result of its situation in a historic paradigm. Furthermore, the involvement of Aboriginal community members and leaders within the Project allow for cultural competency to be met, and findings, implications, and action to be made relevant and useful. The ultimate goal of the Project is providing evidence based advocacy for positive change.

Several limitations of this study must be addressed. As the focus of the study is limited to only Aboriginal young people who use drugs in two British Columbian cities, we cannot extrapolate our findings as generalizable to all Aboriginal people living in urban Canadian cities. Non-participants were not included in this study, and non-response

bias is a possibility. Our recruitment method is not random, and may not include people who are socially isolated (Faugier & Sargeant, 1997). However, if referral chains sufficiently penetrate into networks of hidden populations, this form of sampling can capture the isolated individuals of the population and provide a nonbiased sample (Magnani, et al., 2005).

Additionally, we cannot estimate the effects of memory loss on traumatic lifetime events, events that occurred in early childhood, and those that occurred while under the influence of drugs. Non-differential misclassification of an exposure variable and the resultant bias can lead to a relative risk estimate that may be either toward or away from the null hypothesis (Fung & Howe, 1984). Furthermore, the findings of the Cedar Project are based on self reporting, and participants may have been hesitant to truthfully disclose information that may have been shameful, illegal, or difficult to discuss. One aim of the Project was to minimize such social desirability bias by creating rapport between participants and interviewers, providing assurances of confidentiality, and allowing participants to choose an interviewer whom they trusted.

One limitation that must be addressed is the issue of temporality. We did not examine causation in our study; therefore we cannot ascertain whether risk factors for sexual vulnerability have a causative or predictive effect on our outcome. However, the median age of experiencing sexual abuse much younger than the onset of beginning consensual sexual activity, and it can be assumed that the sexual abuse happened during a period where choosing the use a condom was not an option. Due to the cross-sectional nature of the study design, causation cannot be inferred for the first study of sexual vulnerability at baseline. Many of our trauma variables are also highly correlated, and the

controlling of one in multivariable analysis, may result in losing the effect of another due to over-controlling. As such, if trauma variables are not significant in adjusted models, we must interpret the findings with this reality in mind.

Furthermore, we were unable to explore condom use patterns between types of partners due to sample size limits, the scope of this paper and because the exposure was related to our outcome. As condoms were inconsistently used among individuals who were not single, it is important to explore condom use inconsistencies among people who have casual partners, and sex work clients. It is among those relationships where STI vulnerability may be highest due to the increased number of partners, and larger sexual networks that may exist.

The prospective analysis also presents limitations. The most marginalized participants may have missed follow up, also possibly the most likely to be vulnerable to sexual risks. Therefore the missing data is selective and not random. This loss to follow up bias is the most common bias in longitudinal cohort data especially among marginalized populations. The likely direction of this bias is conservative where we are less likely to find an effect, or that the size of effect is smaller. Therefore, future research would need to observe baseline data such pertaining to condom use patterns comparatively among those who were lost to follow up and those who were not.

#### **4.4 Further research and policy implications**

The epidemiological and sociodemographic data that the Cedar Project has collected and published to date is raising awareness among Aboriginal communities, public health officials and policy makers of the relationships between historical trauma, sexual abuse, illicit drug use and infectious diseases among young Aboriginal people who

use drugs on and off reserve.. The first step to healing is to acknowledge the abuse, as denying its reality only perpetuates the cycle. As Aboriginal families are extended, the disclosure of sexual abuse can result in divisions between communities and affect more than just the child and the assailant. Therefore, support services for all family members are essential to deal with disclosure of sexual abuse. By ensuring that Aboriginal values and customs are integrated into treatment programs, the treatment approach in reaching out to all affected parties can be best achieved. The most successful programs are those that ensure that Aboriginal customs and values are integrated into treatment regimes. In addition, non-Aboriginal service providers must be educated regarding to issues related to cultural safety if they are to be involved in any level of the intervention, treatment, and prevention programs (Aboriginal Healing Foundation, 2007; Joseph, 1995).

Treatment programs, especially ones pertaining to mental health, are not readily available on reserve, and financial strains and a lack of resources prevent the development of such services along with the availability of counseling, legal services, awareness programs, etc. Mental health services are particularly important for the facilitation of healing to prevent the transmission of abuse; many victimizers were once victims. Research on HIV prevention strategies has demonstrated that increases in safe sex behaviours through education was achieved when active behavioural strategies were incorporated into the training (Albarracin et al., 2005). The usefulness of educational programs that combine risk reduction skill training and role playing to increase self-efficacy in communication during sex has been suggested as a powerful sexual education tool (Mitchell and Kaufman, 2002). Further research is required to explore the interaction

between Aboriginal culture and knowledge transmission, style of presentation, and behavioural strategies (Shercliffe et al., 2007).

There is growing recognition that a holistic resiliency approach is a critical component of re-building healthy families and communities that have been heavily impacted by the effects of colonization, including multigenerational traumas associated with the residential school system (Saewyc et al., 2006; Wexler & Goodwin, 2006; Duran et al. 1998). Resilience, in the context of health and well-being, has been studied since the 1970s and the concept is most often defined as the capacity to spring back from adversity and experience positive life outcomes despite emotional, mental or physical distress (Stout & Kipling, 2003). For Aboriginal people, spiritual ceremonies and cultural practices are especially important factors in building resilience and tend to the mental, spiritual, emotional, and physical components of health and well-being (Dell et al., 2005). Such programs can help young Aboriginal people in uncovering and strengthening their inner spirit through provision of community interventions (Walters et al., 2002). Therefore, there is more research required to assess the impact of social, cultural and individual determinants of health on vulnerability to HIV, HCV, and other STIs. Research is required to identify the protective and resiliency factors that will inform the development of resilience-based health interventions for this particularly vulnerable population.

The findings of this study present new evidence on the determinants of sexual vulnerability experienced by the Aboriginal young people who are surviving drug use in Canada. It is an initial step in exploring the larger issue at end, which is susceptibility to STIs and its correlation to historical and ongoing trauma. The Cedar Project is currently



focusing on gaining a better understanding of other factors specific to young, marginalized Aboriginal people that may result in increased susceptibility to HIV infection, including childhood trauma. One such focus will be to initiate various STI testing within the cohort to better understand sexual vulnerability with respect to different infectious diseases. By quantifying within this sample to actual rates of chlamydia, gonorrhea, syphilis, HPV, and herpes, we can develop an understanding of the attributable risk of STIs in HIV infection over time within a marginalized group of young people who are dealing with the continuing effects of lifetime trauma resulting from colonization.

“We need a blending of our cultural, economic, social, and political aspirations with the appropriate tools of today. We want to take from the past, and blend it with the present, and come up with something that is acceptable to and can be carried out by us”  
(Martens, 1988, p.27).



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# Appendix A



PROVIDENCE HEALTH CARE  
Research Institute

Providence Health Care Research Institute  
Office of Research Services  
11<sup>th</sup> Floor Hornby Site  
c/o 1081 Burrard St, Vancouver, BC V6Z 1Y6  
Phone: (604) 806-8567 Fax: (604) 806-8568

## Providence Health Care Institutional Certificate of Final Approval

Principal Investigator: Patricia M. Spittal	Department: School of Population and Public Health	Reference Number: PHC H08-01658
Sponsoring Agencies: Canadian Institutes of Health Research (CIHR)		
Project Title: The Cedar Project: A comparison of the Sexual Vulnerabilities of Young Aboriginal Men and Women Surviving Drug Use and Sex Work in Prince George and Vancouver		
Date Ethical Approval: June 2, 2009		
<p>The UBC-PHC Research Ethics Board granted ethical approval for the above-referenced research project on the date stated above. I am now pleased to inform you that all necessary hospital department/facilities approvals (except SPH Health Records) and institutional agreements/contracts are now in place and that you have permission to begin your research. *</p> <p style="text-align: center;">               Dr. Yvonne Lefebvre              Vice President Research and Academic Affairs, Providence Health Care              President, Providence Health Care Research Institute         </p> <p style="text-align: center;">Date: June 4, 2009</p>		
* SPH Health Records requires a copy of this certificate prior to granting approval.		

St. Paul's Hospital  
Holy Family Hospital  
Mount St. Joseph's Hospital  
St. Vincent's Hospital-Brock Fahrni Pavilion  
St. Vincent's Hospital-Langara  
Youville Residence