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# ***Addressing HIV/AIDS among Aboriginal People using a Health Status, Health Determinants and Health Care Framework: A Literature Review and Conceptual Analysis***

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## **ABSTRACT**

**Objectives:** (1) To describe the Human Immunodeficiency Virus (HIV) infection among Aboriginal populations using a mixed methods approach (i.e. quantitative and qualitative methods); (2) to examine the individual-level and community-level relationships between HIV/AIDS, health determinants, and health care (e.g. diagnosis, access to treatment and health services planning); and (3) to explore innovative solutions to address HIV/AIDS among Aboriginal populations based upon research and infrastructure (e.g. partnerships, data sources and management, health indicators and culture) and policy (i.e. self-determination of Aboriginal Peoples).

**Methods:** Literature review and conceptual analysis using a health status, health determinants and health care framework.

**Results:** In comparison to non-Aboriginal persons, HIV infection is higher among Aboriginal persons, is more directly attributable to unique risk factors and socio-demographic characteristics, and yields more adverse health outcomes. Culture, poverty and self-determination are determinants of health for Aboriginal populations. Aboriginal people have inadequate primary care and, in particular, specialist care. It is necessary to include traditional Aboriginal approaches and culture when addressing Aboriginal health while understanding competing paradigms between modern medicine and Aboriginal traditions.

**Conclusion:** There is a need for self-determination of Aboriginal Peoples in order to improve the health of Aboriginal communities and those living with HIV/AIDS. Research and policy affecting Aboriginal people should be of the highest quality and based upon Aboriginal community relevance and involvement.

## **INTRODUCTION**

In 2006, 3.8% of the 31,241,030 people living in Canada identified as having Aboriginal ancestry (Statistics Canada, 2008). For the period 1996 to 2006, the growth rate for the Aboriginal identity population was 44.9% in comparison to the non-Aboriginal population at 8.4% (Statistics Canada, 2008). This growth rate is particularly noteworthy when taken into account with other factors such as poverty. “Long considered to be the most disadvantaged group in an otherwise affluent society, Aboriginal people today paradoxically experience the kinds of health problems most closely associated with poverty, problems linked to their historical position within the Canadian social system” (Waldram, Herring, & Young, 2007, p. 3).

The Aboriginal people of Canada consist of three distinct groups: First Nations, Métis and Inuit (Department of Justice Canada, 1982). According to the 2006 Canadian census, First Nations comprise the largest portion of the Aboriginal population at 59.5% followed by the Métis at 33.2% (Statistics Canada, 2008). “‘Status’ or ‘registered’ Indians are those individuals legally recognized by the federal government to be ‘Indians’ for purposes of the Indian Act....The Inuit are separate from the registered Indians, and there is no legislation comparable to the Indian Act defining them. The federal government has nevertheless assumed primary responsibility for these people and provides or delegates many services to them as if they were registered

Indians. The Métis and non-status Indians have a legal status that is, in many ways no different from that of other Canadians, the Constitution notwithstanding” (Waldram, Herring, & Young, 2007, p. 11). According to the Canadian Constitution, Aboriginal Peoples of Canada have existing Aboriginal and treaty rights which are recognized and affirmed (Department of Justice Canada, 1982).

Aboriginal people in Canada are a ‘young’ population. In comparison to the non-Aboriginal population, the median age of the Aboriginal populations is younger at 26.5 years (Statistics Canada, 2008) versus 39.5 years (Statistics Canada, 2007). These demographics will have an impact on the distribution of the Aboriginal population over time (i.e. the aged 65 and over dependency ratio, and the child dependency ratio). Given the growth rate, the health problems associated with poverty and the historical position of Aboriginal people within the Canadian social system, it is important to be aware of Aboriginal health in Canada and the implications of this situation for future health research and policy.

A literature review of Aboriginal health issues was conducted by Young (2003) covering the period 1992 to 2001. Exclusion criteria included articles which did not have an abstract and did not focus on Aboriginal people, health or Canada. This review measured exposure and outcome variables and it yielded 254 published research articles categorized into three main topics: health determinants, health status and health care. The literature review revealed that off-reserve and urban Aboriginal people were underrepresented, as were the Métis. The Inuit were overrepresented. Sixty percent of the articles targeted First Nations. Further, over half of the articles did not utilize a comparison group. Moreover, 28% of the 174 health determinants-categorized articles only made reference to the social environment and of the 173 health status-categorized articles, very few of them made reference to the Human Immunodeficiency Virus (HIV) (4.6%) and mental health (4%) issues. Although this literature review was restricted to published articles using a Western scientific paradigm, it provided an excellent framework to set health research and policy priorities focusing on Aboriginal populations.

In order to complement the Young (2003) literature review and address the limited information on HIV and mental health issues, Nowgesic (2010) conducted a separate literature review and developed an annotated bibliography which will inform the rest of this paper. This paper will also use the health status, health determinants and health care framework developed by Young (2003) in order to address HIV among Aboriginal people mainly from a social epidemiological perspective.

It is evident that health disparities exist in Canada between Aboriginal people and non-Aboriginal people. Of particular importance to population health and public health is the rate of HIV infection among Aboriginal people. HIV is higher among Aboriginal people in comparison to non-Aboriginal people (Craib et al., 2003; Heath et al., 1999). Furthermore, the time between diagnosis and access to care among Aboriginal HIV-infected persons is longer compared to non-Aboriginal persons (Plitt et al., 2009). Given such health inequities, this paper will address the relationship between HIV, health determinants and health care within the overall context of future directions in Aboriginal health research and policy. The objectives of this paper are: (1) to describe HIV among Aboriginal populations using a mixed methods approach (i.e. quantitative and qualitative methods); (2) to examine the individual-level and community-level relationships between HIV, health determinants (e.g. colonialism, poverty, mental health, culture, Aboriginal self-determination), and health care (e.g. diagnosis, access to treatment and health services planning); and (3) to explore innovative solutions to address HIV among Aboriginal populations based upon research and infrastructure (e.g. partnerships, data sources and management, health indicators and culture), and policy (i.e. self-determination of Aboriginal people). Each objective discussed in this paper will be supported by evidence and a body of knowledge.

## **OVERALL CONTEXT AND IMPORTANCE OF HIV AMONG THE ABORIGINAL POPULATION IN CANADA**

In 2005, it was estimated that 58,000 people were living with HIV in Canada, and Aboriginal people accounted for approximately 7.5% of all prevalent infections (Public Health Agency of Canada, 2007). Also in 2005,

among all Canadians, new HIV infections were estimated at a range of 2,300 to 4,500, and Aboriginal persons accounted for 9% of all new HIV infections (Public Health Agency of Canada, 2007). “Therefore, the overall infection rate among Aboriginal persons is 2.8 times higher than among non-Aboriginal persons”, (Public Health Agency of Canada, 2007, p. 4). City of Vancouver estimates had even higher rates (Wood et al., 2008). According to the Wood et al. (2008) study of injection drug users (IDUs) living in Vancouver, the HIV prevalence rates among Aboriginal persons was much higher than among non-Aboriginal persons (25.1% vs. 16%);  $p < .001$ ) as was the cumulative HIV incidence, estimated at 48 months (18.5% vs. 9.5%;  $p < .001$ ).

Of the 21,435 positive HIV tests reported to the Public Health Agency of Canada from 1998 to 2006, a total of 6,253 (29.2%) contained information on ethnicity (Public Health Agency of Canada, 2007). Of these, 1,458 (23.3%) were accounted for by Aboriginal persons. In comparison to non-Aboriginal people, positive HIV test reports among Aboriginal people were mostly attributable to injection drug use (IDU) at 24.8% and 58.8% respectively. Positive HIV test reports were higher among Aboriginal women than non-Aboriginal women at 48.1% and 20.7% respectively. Also, positive HIV tests were mostly reported from Aboriginal persons younger than 30 years (32.4%) in comparison to non-Aboriginal persons (21.0%) of the same age category.

In addition to HIV surveillance, the monitoring of Acquired Immunodeficiency Syndrome (AIDS) is also useful in describing the HIV/AIDS epidemic. In comparing the Aboriginal groups, there is a difference between exposure categories and gender and age for reported AIDS cases between 1979 and 2006 (Public Health Agency of Canada, 2007). AIDS cases among First Nations were mostly IDU (45.2%) and aged 30-39 years (45.7%) for both sexes combined. The main characteristics of Inuit AIDS cases were IDU (31.8%), heterosexual (31.8%), and aged 30-39 years (54.5%) for both sexes combined. The Métis AIDS cases were mainly men who have sex with men (MSM) at 48.8% and aged 30-39 years (45.5%) for both sexes combined. And finally, among unspecified Aboriginal AIDS cases, the main characteristics were MSM (37.9%) and those aged 30-39 years (49.5%) for both sexes combined.

The overall context and importance of HIV among Aboriginal populations is unquestioned. This paper adopts a social epidemiological perspective in addressing HIV among Aboriginal people and looks at a health status, health determinants, and health care framework in order to guide health research priority-setting and policy development.

## **THE HIV EPIDEMIOLOGY AMONG ABORIGINAL PEOPLE**

As described above using surveillance data, HIV infection is a major health problem affecting Aboriginal people today. Targeted studies are able to provide additional information describing the epidemiology of HIV among Aboriginal people. In comparison to non-Aboriginal persons, the incidence of HIV infection is higher among Aboriginal people (Craib et al., 2003), it is more directly attributable to unique risk factors and socio-demographic characteristics (Heath et al., 1999), and it yields more adverse health outcomes (For the Cedar Project Partnership et al., 2008).

A prospective cohort study conducted by Craib et al. (2003) examined risk factors for increased HIV incidence among Vancouver Aboriginals for the period May 1996 to December 2000. The study involved 230 Aboriginal persons and 711 non-Aboriginal persons all of whom were HIV seronegative upon entering the study. The Aboriginal participants included First Nations (42%), Métis (14%), and other Aboriginals (42%). At 42 months, the HIV incidence among the Aboriginal group was two times higher than the non-Aboriginal group (21% vs. 11%). There was increased risk for both Aboriginal men and women, although due to an insufficient sample size, the risk for Aboriginal women was not statistically significant. Independent predictors of HIV infection were different between Aboriginal males (i.e. frequent cocaine injection and frequent speedball - combined cocaine and heroin - injection) and Aboriginal females (i.e. going on IDU binges, frequent speedball injection, and using condoms with regular sexual partners). The strength of the study is that it is based upon a study of which 24% of the 941 research participants (male and female) were of Aboriginal ancestry, which was thought to be representative of the study population located in the Downtown Eastside community of Vancouver.

Another prospective cohort study, involving MSM living in Canada, examined socio-demographic characteristics and risk factors associated with HIV infection incidence from May 1995 to May 1998 (Heath et al., 1999). The study involved 57 Aboriginal (First Nations, Métis and Inuit) and 624 non-Aboriginal persons aged 18 to 30 years who were HIV seronegative upon enrollment into the study. In comparison to non-Aboriginal MSM, Aboriginal MSM were more likely to have lower socioeconomic status ( $p < .01$ ) and experience depression ( $p < .01$ ). In comparison to non-Aboriginal MSM, a larger proportion of Aboriginal MSM had at least one occurrence of non-consensual sex (50% vs. 33%) which was statistically significant. This non-consensual sex experience involved a relative as the perpetrator in 50% and 25% of cases for Aboriginal MSM and non-Aboriginal MSM respectively. A larger proportion of Aboriginal MSM, upon their first occurrence of non-consensual sex, were 12 years of age and under ( $p = .04$ ). At baseline, newly diagnosed HIV infection was higher among Aboriginal MSM in comparison to non-Aboriginal MSM (4% vs. 1%) although this was not statistically significant.

A cross-sectional study conducted by For the Cedar Project Partnership et al. (2008) examined the association between HIV infection and sexual abuse among Aboriginal people (i.e. Métis, Inuit and First Nations – status and non-status) who lived in Vancouver or Prince George, British Columbia. The study was conducted from October 2003 to April 2005 and used a post-colonial perspective (i.e. historical and intergenerational trauma). Eligibility criteria included the use of drugs within the month prior to enrolment in the study. Drug use was confirmed by saliva screening. Forty-eight percent of participants had experienced sexual abuse with 85% of them occurring before age 13 (the median age was 6 years). This study clearly showed that sexually abused participants were more likely to have been diagnosed with a mental illness, have suicidal ideology, have ever self harmed, have attempted suicide, have lifetime sexual partners  $> 20$ , and have tested HIV positive. Participants who were sexually abused had HIV prevalence rates that were almost four times higher (15% vs. 4%) than those who were never sexually abused.

As revealed in numerous studies, the health status among Aboriginal people is poorer than non-Aboriginal people. Particularly, HIV infection is a critical health disparity mainly affecting Aboriginal populations. It is important to question what determines the higher HIV rate among Aboriginal persons. The three studies noted here have attempted to describe and analyze the occurrence, pattern and distribution of HIV infection among Aboriginal populations (Craib et al., 2003; Heath et al., 1999; For the Cedar Project Partnership et al., 2008). Others have argued for future studies “to move research beyond the division which now exists between epidemiological and cultural studies” (Wilson & Rosenburg, 2002). However to do so, it is important to consider the role health determinants play in the overall health of Aboriginal people.

## **DETERMINANTS OF HEALTH FOR ABORIGINAL PEOPLE**

A study commissioned by the Canadian Aboriginal AIDS Network (Hawkins, Loppie-Reading, & Barlow, 2009) “describes the pathways through which experiences of childhood abuse can lead to future violence in the lives of Aboriginal women with HIV/AIDS and how multifaceted and interwoven these two areas are” (p. 6). It is studies like these that help to further explain why and how health events take place. Additionally, these types of qualitative studies may also assist with generating hypotheses which can then be tested by epidemiological studies. It is the ‘causes of the causes’ or determinants of health (e.g. socio-economic conditions, lifestyle and personal behaviours) which can help to explain the proximal causes, and various causal models in relation to health status. For example, the Indian Act (i.e. structure) may be viewed as a determinant of health for First Nations living in Canada. “First passed in 1876, the Indian Act was designed to facilitate the administration of programs to Indians, as well as to facilitate their assimilation into mainstream Canadian society” (Waldrum, Herring, & Young, 2007, p. 11). Similar health determinants have been studied by others (DeGagne, 2007; Larkin et al., 2007; Chandler & Lalonde, 1998) on both a ‘macro’ (i.e. pattern) and “micro” (i.e. individual health problems) level.

“In 1991, a royal commission was established to investigate a variety of Aboriginal issues in Canada, and one of its priorities was to learn the truth about residential schools. The Royal Commission on Aboriginal Peoples (RCAP)...concluded that nothing short of a complete restructuring of Aboriginal/non-Aboriginal relations in

Canada was required” (Waldram, Herring, & Young, 2007, p. 19). One of the main outcomes of the RCAP was the establishment of the Aboriginal Healing Foundation (AHF).

The AHF and its community initiatives -- a \$390 million investment which took place from 1998 to 2007 -- were evaluated and reported for the time period 1998 to 2005 by DeGagne (2007). The community initiatives addressed the intergenerational legacy of abuse from the Aboriginal residential school system. “The church-run residential schools clearly did serious damage to the lives and cultures of Aboriginal people...[M]any of these changes are now seen to have a direct impact on the mental and physical health and well-being of Aboriginal people today” (Waldram, Herring, & Young, 2007, p. 15). Results of the AHF evaluation indicated that a total of 1246 contribution agreements were supported, valued at \$377,745,857 and involving 725 organizations and communities (DeGagne, 2007). AHF-supported projects reported to be most effective included use of Elders, traditional ceremonies, individual counseling, and western healing strategies used in conjunction with Aboriginal cultural practices. The outcome of the evaluation indicated that “culture is good medicine” and that community healing supports individual healing. In essence, it can be said that culture is an important health determinant of Aboriginal populations.

Consistent with the DeGagne (2007) evaluation, a qualitative study was conducted by Larkin et al. (2007) in order to support HIV prevention education. Larkin et al. (2007) studied the understanding of both structure and the essence of Aboriginal youth’s (males and females aged 14 to 29 years) lived experience. The study used a participatory paradigm and a grounded theory methodology. The study indicated that some youth understood HIV to be associated with the effects of colonialism. Aboriginal youth were concerned about the effects of HIV on their communities within the context of structural inequities (e.g. poverty). The study by Larkin et al. (2007) highlights the fact that colonialism and structural inequities are determinants of health for Aboriginal populations.

Community control may also be considered a health determinant. “The 1980s saw the federal government develop many joint ventures with First Nations, and many took delegated control of areas such as social services, education, and health under ‘transfer’ programs” (Waldram, Herring, & Young, 2007, p. 19). Here community control may be viewed as a means of attaining Aboriginal self-determination and ultimately Aboriginal self-government. “In 1986...the formation of the ‘Program Transfer and Development Directorate’ [was] to direct the new ‘Indian Health Policy’ ...[so] that First Nations could develop slowly, through stages, to the point where they ultimately obtained control over the delivery of health services” (Waldram, Herring, & Young, 2007, p. 267). The assumption of this policy is that ‘health transfer’ (i.e. the transfer of health services administration to First Nations) will lead to the improved health of First Nations.

Following the introduction of the federal Program Transfer and Development Directorate, Chandler and Lalonde (1998) investigated protective factors against suicide among First Nations communities (i.e. 29 tribal councils) from 1987 to 1992. Protective factors in the study were based upon tribal councils’ ability to maintain and retain the continuity of their respective culture. Cultural continuity was measured using six community-level variables: land claims, self-government, education services, police and fire services, health services and cultural facilities. Corresponding scores (from 1 to 6) were then provided to each of the 29 tribal councils based upon an accumulation of the six variables. For example, a score of 6 denoted the highest level of cultural continuity. Results of the study indicated that those tribal councils with higher scores had lower suicide rates than tribal councils with lower scores. The study claims to have provided evidence of the importance of culture in determining health outcomes. However, the results of the study should be interpreted with caution since using community-level data to make inferences concerning what may be occurring at an individual level (e.g. suicide) may or may not be accurate.

As seen from various studies (DeGagne, 2007; Larkin et al., 2007; Chandler and Lalonde, 1998), whereas colonialism, residential schools and poverty are negative determinants of health, Aboriginal culture, and self-determination are key determinants positively affecting the health of Aboriginal populations. From a socio-cultural perspective, the idea of using a health determinants approach among Aboriginal Peoples is not new. “The

general model of the 'Medicine Wheel', found today throughout many different parts of Aboriginal Canada, has been developed to explain health determinants in a manner that reflects Aboriginal world views" (Waldram, Herring, & Young, 2007, p. 74). Learning from the cultural appropriateness of using the Medicine Wheel vis-à-vis determinants of health, it is important to examine health care that is relevant to Aboriginal populations.

## **HEALTH CARE OF ABORIGINAL PEOPLE**

"What is the role of health care services in improving the health of Aboriginal people? How can the health of Aboriginal people be improved?" (Young, 2010, p.2). These are important questions to consider in reviewing health care of Aboriginal people. It has been reported by others that Aboriginal people have inadequate primary care and, in particular, specialist care (Martens, Sanderson, & Jebamani, 2005; Shah, Gunraj, & Hux, 2003; Wardman, Clement, & Quantz, 2005). Furthermore, within the context of HIV, "a feeling of invulnerability was a barrier to [HIV] testing [and f]or those who tested positive, there was often a delay in accessing health services" (Mill et al., 2008, p.1). Some of these issues have been indirectly identified in the previous section of this paper addressing determinants of health; however, in order to fully appreciate these concerns, there is a need for specific studies on Aboriginal health care.

Plitt et al. (2009) estimated the stage of HIV disease at time of diagnosis and examined the time between diagnosis and access to care among HIV infected persons. The study population was persons newly diagnosed (case) with HIV in Northern Alberta from May 1998 to December 2003. Of those 526 persons newly diagnosed with HIV, approximately 41% identified as being Aboriginal. Aboriginal ethnicity was defined as North American Indian, Inuit, and Métis. Aboriginal persons had longer median time to care at 38 days ( $p = .001$ ) in comparison to non-Aboriginal groups (i.e. Caucasian, 27 days; African-Caribbean, 20 days; Asian, 22 days; and others, 19 days). A similar study conducted by Wood et al. (2006) investigated access to antiretroviral therapy (ART) among Aboriginal IDUs who were ART naïve. This prospective cohort study took place from 1996 to 2003, and included 91 IDUs (both Aboriginal and non-Aboriginal people). These individuals were recruited into the study from Vancouver's Downtown Eastside using street outreach and self-referral. ART initiation was ascertained by means of record linkage to a treatment registry. Both groups had similar HIV RNA levels and CD4 counts at baseline and at the time when ART was initiated. At 24 months into the study, the use of ART was lower among Aboriginal participants (29% vs. 53%, log-rank  $p = .023$ ). Using multivariate analyses, these findings were consistent where Aboriginal participants had initiated ART at a slower rate than non-Aboriginals ( $p = .035$ ).

Findings from both the Plitt et al. (2009) and the Wood et al. (2006) studies encourage future research to examine barriers to accessing HIV treatment in a timely manner among Aboriginal persons. This is not surprising since challenges exist for health services planning as described by others (Minore, Katt, & Hill, 2009). In their study, Minore, Katt, and Hill (2009) reviewed existing data management systems and identified requirements necessary to implement an Aboriginal health services data collection system in Ontario. Results of the study included a review of 177 published documents, and 20 key informants. Key issues identified were data coverage and quality (e.g. linking data sources, small sample sizes, low participation rates), and jurisdictional issues (e.g. lack of standardization of data and infrastructure, and inconsistencies among regions). One noteworthy jurisdictional issue they identified pertained to self-governance of Aboriginal Peoples (i.e. research). This issue will be further explored and elaborated upon in the next section of this paper dealing with future directions in Aboriginal Health research and policy.

## **FUTURE DIRECTIONS IN ABORIGINAL HEALTH RESEARCH AND POLICY**

Upon reviewing the issues identified in this paper thus far (i.e. health status, health determinants and health care), it is evident that innovative solutions are required to address HIV among Aboriginal populations. Furthermore, such solutions should be based upon excellent research, supportive infrastructure and effective policy. To date, many initiatives have begun to lay the groundwork for future directions in Aboriginal health research and policy.

Namely, the Indian and Inuit Community Health Representative Program established in the early 1960s; the Aboriginal Nurses Association of Canada (established in 1975); Health Canada, Indian and Inuit Health Careers Program (1984); First Nations Regional Longitudinal Health Survey (1997); National Aboriginal Achievement Foundation (1998); Aboriginal Healing Foundation (1998); Canadian Institutes of Health Research – Institute of Aboriginal Peoples` Health (2000) and its Aboriginal Capacity and Developmental Research Environments program (2001); and the National Aboriginal Health Organization (2000) and its Journal of Aboriginal Health (Waldram, Herring, & Young, 2007). Dedicated to addressing HIV/AIDS, the Canadian Aboriginal AIDS Network (CAAN), first established in 1997, “provides leadership, support and advocacy for Aboriginal people living with and affected by HIV/AIDS” (Canadian Aboriginal AIDS Network, 2006, p. ii). In 2006, this organization published its inaugural edition of the *Canadian Journal of Aboriginal Community-Based HIV/AIDS Research* (Canadian Aboriginal AIDS Network, 2006). While all these initiatives are directly relevant to Aboriginal populations, each one incorporates Aboriginal culture and traditions in a unique manner which is very encouraging. Despite the significant losses of traditional Aboriginal medicine due to epidemic diseases and colonialism, for example, many traditional health practices have begun to reemerge (Waldram, Herring, & Young, 2007). Studies have indicated the necessity of including traditional Aboriginal approaches (i.e. epistemology and ontology) in addressing Aboriginal health while understanding competing paradigms between modern medicine and Aboriginal traditions (Cochran et al., 2008; Bartlett, Iwasaki, Gottlieb, Hall, & Mannell, 2007; Hunter, Logan, Goulet, & Barton, 2006; Labun & Emblen, 2007; Myers et al., 1999; Ten Fingers, 2005). Notwithstanding the challenges of incorporating traditional Aboriginal health and healing practices with Western medicine and health sciences “...it is clear that ‘traditional’ Aboriginal healing, with its attendant base in spirituality, continues as an essential corner-stone of Aboriginal cultural revitalization” (Waldram, Herring, & Young, 2007, p. 292).

Given the social epidemiological perspective concerning the health of Aboriginal people discussed thus far (e.g. poverty, HIV, mental health, culture, and health services planning and research) what becomes apparent is the need for self-determination of Aboriginal Peoples. That is, Aboriginal populations taking control of their own health services on one end of the self-determination spectrum, and Aboriginal self-government on the other end. “It was the federal government’s new ‘Indian Health Policy’, unveiled in 1979, that sparked the process of self-determination in Aboriginal health care....What was required was increased input by Aboriginal people themselves” (Waldram, Herring, & Young, 2007, p. 264). While self-determination in Aboriginal health care presents many challenges, it also provides invaluable opportunities and future directions as discussed by others (O’Neil, Elias, & Wastesicoot, 2005; Jebamani, Burchill, & Martens, 2005; Daniel et al., 2009; Kirmayer, Simpson, & Cargo, 2003; Getty, 2010).

Within the context of health research, there are some lessons to be learned from O’Neil, Elias, and Wastesicoot (2005) who reported on a relationship-building process between the Assembly of Manitoba Chiefs and the University of Manitoba regarding a feasibility study to develop a National Longitudinal Aboriginal Survey. Aboriginal partners agreed to such an initiative provided they were included in all aspects of the study including First Nations ownership of all research derivatives (e.g. copyright). It was recommended that University researchers should consider relinquishing control (i.e. research processes) if partnerships with First Nations are negotiated, and that First Nations should be seen as the principal partner with the university, even at the expense of alienating other partners.

In support of research processing, Jebamani, Burchill, and Martens (2005) studied linking the Manitoba health database with the Health Canada, First Nations and Inuit Health Branch, Manitoba Region-managed Status Verification System (SVS). The SVS is based upon the Indian and Northern Affairs Canada-managed Indian Registry file. Upon negotiations with interested parties (e.g. Assembly of Manitoba Chiefs), the linkage involved anonymous files for the period 1994 to 1999. The multistage linkage process involved different variations of matched variables (e.g. Manitoba Health registry number, name, sex, birth year) with and without support of a manual review. Jebamani et al. (2005) were able to match the two databases 70%, 94%, 99% and 96% of the time on surname, given name, sex and birth year, respectively. Although this represented a 20% decrease in SVS

records, the linkage yielded an increase of 20% over the Manitoba health data. Consequently, the study yielded a more complete data repository of registered First Nations living on and off reserve in Manitoba.

In addition to those research infrastructure challenges studied by Jebamani et al. (2005), other data-specific issues exist but not without their own solutions as described by others (Daniel et al., 2009). In their study, Daniel et al. (2009) evaluated an instrument (a 19-item rating tool) which was developed to assess the appropriateness of health and social indicators based upon both scientific merit and cultural relevance to the indigenous communities from Canada, New Zealand and Australia. The outcome of the study was the development of a final 16-item rating tool. It is noteworthy to mention that the scientific validity-items were assessed independently by parties trained in scientific methodology.

From a health determinant approach to HIV prevention and treatment, there are lessons to be learned from the study conducted by Kirmayer, Simpson, and Cargo (2003) where they researched Aboriginal health issues (e.g. social, individual, intergenerational, community) within the context of colonialism, and developed strategies that were culturally appropriate for Aboriginal people. It was revealed that mental health problems among Aboriginal populations are associated with their cultural oppression. They recommended that mental health promotion strategies aim at strengthening cultural identity and empowering the Aboriginal community. Furthermore, the Kirmayer et al. (2003) study revealed a number of events and initiatives which support the process of reversing the oppression and cultural marginalization of Aboriginal people: (1) Aboriginal people gaining the right to vote in 1967; (2) the 1990 "Oka crisis"; (3) the 1991 Royal Commission on Aboriginal Peoples (RCAP); (4) the 1993 establishment of the Native Residential School Task Force supported by the Royal Canadian Mounted Police to investigate residential schools; (5) the 1998 federal government response to the RCAP report; and (6) the establishment of new organizations supporting Aboriginal health (e.g. the Aboriginal Healing Foundation, the Canadian Institutes of Health Research - Institute of Aboriginal Peoples' Health, and the Truth and Reconciliation Commission).

Consistent with and even building upon the findings from the Kirmayer et al. (2003) study, Getty (2010) conducted a qualitative study and provided a narrative of her own experience as a "white" researcher planning to conduct research with First Nations (Mi'kmaq) men using an advocacy/participatory paradigm. The study used qualitative methods, a critical theory (post-colonial) framework, and narrative as a research methodology. The study involved the researcher and three Mi'kmaq men. The results of the study included the researcher's initial use of a postcolonial framework which was later abandoned and replaced by a critical indigenous framework using a Mi'kmaq ontology and epistemology. This change in perspective was to support Mi'kmaq in being an integral part of the research process whereby the research was based upon Mi'kmaq's own experience and understanding instead of being conducted from the researcher's viewpoint. The researcher realized that if she continued using a postcolonial framework to carry out the research, the externality validity (i.e. authenticity) of the research itself would be limited. The strength of the study is that it supported Mi'kmaq research using an advocacy/participatory paradigm whereby the outcome was to emancipate the Mi'kmaq (i.e. Mi'kmaq self-determination) from hegemonic groups.

From the literature, there are lessons learned which could be used to address HIV among Aboriginal populations. These range from building effective partnerships to respecting Aboriginal culture to supporting the self-determination of Aboriginal people. However such solutions should be of the highest quality and based upon scientific excellence and relevance to Aboriginal populations. Furthermore, Waldram, Herring, and Young (2007) "...encourage concrete studies on the efficacy of Aboriginal-controlled treatment and education programs...to generate rigorous information on what works and what does not...with an eye to increasing the extent to which self-determination improves community health" (p. 288). It is by such means that the health status, health determinants, and health care for Aboriginal populations will be supported.

## CONCLUSION

This paper has provided a review of the health of Aboriginal populations, and in particular HIV infection in these populations. It has discussed causes of HIV within a health status, health determinants, and health care framework. The overall health, and in particular HIV infection, among Aboriginal populations was described using a mixed methods approach (i.e. quantitative and qualitative methods). The individual-level and community-level relationships between HIV, health determinants (e.g. colonialism, poverty, mental health, culture, and Aboriginal self-determination), and health care (e.g. diagnosis, access to treatment, and health services planning) were examined. And finally the paper explored future directions and innovative solutions for addressing HIV among Aboriginal populations based upon research and infrastructure, and policy.

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