First Nations Wholistic Policy and Planning Model

Discussion Paper for the World Health Organization Commission on Social Determinants of Health

April 2007

Dr. Jeffrey L. Reading, Professor, Faculty of Human and Social Development, University of Victoria, Canada
Dr. Andrew Kmetic, Adjunct Assistant Professor, University of Victoria, Canada
Dr. Valerie Gideon, Senior Director, Health and Social, Assembly of First Nations, Canada

Table of Contents

1. INTRODUCTION 4

1.1 Historical Context 5

Aboriginal and Treaty Rights 5

Impacts of Colonization on Social Determinants of Health 6

1.2 Social Context of Health Research 8

2. SOCIAL DETERMINANTS OF HEALTH 11

2.1 Socio-Economic Status Tied to Health Disparities 14

2.2 Addressing Social Determinants of Health 16

A Case in Point: The Influence of Social Support and Social Exclusion 17

3. FIRST NATIONS WHOLISTIC POLICY AND PLANNING MODEL 23

3.1 Population Health Models Applied to First Nations 24

3.2 Nation-Building as Foundation of First Nations Policy Development 25

3.3 AFN's First Nations Wholistic Policy and Planning Model 29

4. SIX CHALLENGES TO ENHANCE KNOWLEDGE ON FIRST NATIONS SOCIAL DETERMINANTS OF HEALTH 32

5. CONCLUSION 35

REFERENCES 36

APPENDIX A: BACKGROUND ON INTERNATIONAL AND ETHICS ACTIVITIES SUPPORTED BY CANADA'S IAPH 46

International Health Research Agency Agreements 46

Ethics Guidelines for Health Research Involving First Nations Peoples 47

APPENDIX B: OVERVIEW OF FIRST NATIONS' SOCIAL DETERMINANTS OF HEALTH, AND RECOMMENDED INTERVENTIONS 49

Early Life 49

Prenatal Health and Development 49

Maternal Smoking 50

Antenatal Influence of Alcohol and Drugs 51

Other Maternal Influences 52

Breastfeeding 53

Child health 55

Cultural Continuity 55

Smoking ... 56
Nutrition ... 57
Obesity ... 57
Education ... 60
Residential Schools Legacy ... 61
Elementary and Secondary Schooling ... 61
Post-Secondary Schooling ... 62
Addictions ... 63
Tobacco ... 63
Childhood and Adolescent Influence of Tobacco Smoking ... 64
Intervention Programs ... 65
Alcohol ... 66
Childhood and Adolescent Influence of Alcohol ... 66
Interventions ... 66
Drug Use ... 68
Childhood and Adolescent Influence of Drug Use ... 68
Interventions ... 69
Housing and Food Security ... 70
Housing and Living Conditions ... 70
Food Security ... 73
Obesity ... 75
Deficiencies ... 76
Healthcare Access ... 77
Barriers to Health Care Access ... 79
Location ... 79
Education and awareness ... 79
Cultural factors ... 80
Economic issues ... 81

1. Introduction

Rising costs and demand for Canadian health care have resulted in unprecedented efforts towards concerted planning among federal, provincial and territorial governments. Despite strong evidence showing greater effectiveness of a population health versus a biomedical approach, Canada lags behind other nations in matching theory to practice. Adopting a social determinants of health lens for the Canadian health care system highlights, even more dramatically, the gap between First Nations' and non-First Nations Canadians' well-being. The examination of social determinants of health of First Nations in Canada can also identify patterns of explanatory factors that may assist in discovering social actions that could be ultimately improve the health status indicators of Indigenous peoples worldwide.

The Assembly of First Nations (AFN) is the national representative organization of First Nations in Canada. There are over 630 First Nations communities in Canada. The AFN Secretariat is designed to present the views of the various First Nations through their leaders in areas such as: Aboriginal and Treaty Rights, Economic Development, Education, Languages and Literacy, Health, Housing, Social Development, Justice, Taxation, Land Claims, Environment, and a whole array of issues that are of common concern.

First Nations communities fall under 50 culturally and linguistic distinct groups dispersed across Canada. There are a number of other political entities that also represent the different First Nations populations at different levels, including local Band councils, tribal councils, and provincial organizations.

To improve access to opportunities for better health and well-being of First Nations, their geopolitical and cultural diversity must be reflected in whatever approach is used. "*Given their diversity, it may be best to emphasize regional or local solutions than can focus on communities or community needs rather than searching for broad solutions that are unlikely to address the unique needs of different communities across the country.*" (page 222 Romanow Commission)

1.1 Historical Context

Aboriginal and Treaty Rights

Aboriginal and Treaty rights are recognized and affirmed in the *Canadian Constitution Act, 1982*. Aboriginal rights are based in Indigenous Knowledge, heritage, culture and traditions encompassing all aspects of Indigenous societies.

First Nations signed treaties with British and later, Canadian governments both preceding and following the Confederation of the country in 1867. This first period of interaction between First Nations peoples and the forthcoming "Government of Canada" was characterized by the principles of recognition, respect and the general goals of cooperation and mutual co-existence (AFN 2006). Although these treaties differed, there was usually provision for certain rights and payments. The rights as an individual treaty Indian depended on the precise terms and conditions of each treaty. In 1876, the one treaty that specifically mentioned medical care is Treaty Six. It contains the Medicine Chest Clause:

> "that a medicine chest shall be kept at the house of each Indian Agent for the use and benefit of the Indians at the direction of such agent.....
> *That in the event hereafter of the Indians comprised within this treaty being overtaken by any pestilence, or by a general famine, the Queen, on being satisfied and certified thereof by Her Indian Agent or Agents, will grant to the Indians assistance of such character and to such extent as Her Chief Superintendent of Indian Affairs shall deem necessary and sufficient to relieve the Indians from the calamity that shall have befallen them."*

There are conflicting views concerning the constitutional responsibilities for First Nations health care and the result is a confusing mix of federal, provincial and territorial programs and services, as well as, services provided directly by some First Nations communities.

The Commission on the Future of Health Care in Canada-Final Report (also known as the Romanow Commission stated that,

> "(t)he Canadian government is responsible for funding and organizing services for First Nations living on reserves. According to the federal government there is no constitutional obligation or treaty that requires the Canadian government to offer health programs or services to First Nations people. A 1974 ministerial policy statement describes federal responsibility for First Nations health issues as voluntary, aimed at ensuring "the availability of services by providing it directly where normal services [were] not available and giving financial assistance to indigent Indians to pay for necessary when the assistance [was] not otherwise provided" (Canada. Health and Welfare 1974)'""

First Nations do not share this interpretation of responsibility. They link federal health programs to statutory or treaty obligations or more broadly to the trustee role of the federal government (AFN 2005).

Impacts of Colonization on Social Determinants of Health

European conquest, as expressed by historic forces of colonization and extended by present day economic forces of globalization, tended to assimilate First Nations peoples into mainstream dominance via global economic policy and indeed strategy (Watch 2005).

The idea that First Nations peoples represent a barrier to rapid economic development is more relevant today than it was historically. It is realistic to consider the situation of First Nations peoples as a crisis, whereby unique tribal people undergo rapid social and cultural changes that promote assimilation into dominant mainstream cultures.

> "Indigenous peoples are often seen as backward and even as a block on modernization and development. People with disabilities are often regarded as abnormal and denied full human rights as a result. The relationships of both these groups with health professionals have historically mirrored and reinforced the prejudices in the wider society…the

> experience of many Indigenous peoples illustrates, provision of health care in squalid 'resettlement camps' is not adequate recompense for the misappropriation of land and the denial of a lifestyle that is central to their concept of health and well being. Rights need to be connected to broader agendas such as freedom from social marginalization, poverty, conflict and oppression – and the voices of groups such as people with disabilities and Indigenous peoples need to be heard in arenas where these issues are discussed." (Watch 2005)

In other words, policies linked to the political economy of nation-states create strong forces which undermine First Nations peoples' legitimate aspirations for self-determination and impose change necessary to ensure survival. First Nations communities are eager to share in the economic benefits of resource development but sadly, many communities have not been partners in development. Consequences felt by First Nations include: widening of the gap in income distribution; economic marginalization; profound vulnerability to economic policies of exclusion whereby their interests are not even recognized both nationally and worldwide.

An important tension to further underline is the interest expressed by First Nations peoples to balance global economic interests with preservation of a way of life that is unique and ancient. While First Nations peoples are a minority population in North American states, they collectively represent an important part of global human biodiversity. First Nations Peoples are defined by their unique relationship to the land and are powerful observers of changes to ways of life that are presently in jeopardy.

A vision for improving health involves partnership among First Nations communities to investigate the spectrum of local and world health issues that move beyond geo-political boundaries to involve governments, NGOs and the special interests of First Nations peoples, many of whom live in extreme poverty due to the historic and present day socio-economic forces of colonization and globalization. Such a vision must go beyond epidemiological description of public health outcomes to a view that celebrates their unique economic, political and social factors, ultimately providing solutions to the pressing need for First Nations peoples to achieve a level of health and well-being that is free from discrimination.

1.2 Social Context of Health Research

Given the stigma depicted by poor health statistics, it is important to reflect on how research and health surveillance are impacted by the power relations between the dominant mainstream society and First Nations peoples. Epidemiological data tend to portray First Nations peoples as generally unhealthy and implicitly unable to manage their own affairs. This has a disempowering effect for some communities and individual members. In direct contrast to the negative portrait of First Nations created by some research, First Nations communities are striving to realize their legitimate aspirations for self determination and governance. Self governance can have a powerful effect on cultural continuity, postulated to be linked as a determinant of mental health status and suicide (Chandler and Lalonde et al., 2003).

An epidemiological paradox arises because it is in the public health interest to raise awareness concerning legitimate health risks, yet in the longer term, the same depiction leads to a social construction that is essentially unhealthy. Such a population level pathology is an insidious, pervasive and subtle form of structural racism and discrimination; once a group is identified with a distinctive pattern of unhealthy behaviour, a bias toward that group seems to perpetuate itself expressed as a racial profile with embedded lower expectations which, in turn, can become a self fulfilling prophesy for future generations.

First Nations peoples in North America are very critical of research for many reasons and seek to create assurances from researchers and public health scientific investigators that their research and surveillance activities will lead to improved health, not the structural characterization of ill health which, in the long term, is thought to be a significant barrier to improved health and well being.

Innovative research now directs effort at meaningful engagement of communities in the research process, building capacity among community, translating research results into policy and programs and the call for proposals that emphasize factors that can assist vulnerable communities to become strong. The tension is real when research fails to reveal community

resiliencies demonstrated by First Nations peoples, as they endure many significant obstacles to achieve a reasonable standard of living. Innovative research strives to counter impressions by First Nations communities, best expressed in the widely used phrase, that they have been ‘Researched to Death’ by transforming their role from research subjects to researchers themselves.

Faced with enormous hurdles, First Nations peoples have, and continue to survive, despite profound lower levels of income and employment, lack of access to health care services and poor community infrastructure, often including substandard housing, lack of potable water and other essentials which determine optimal health and well being of any community.

Hence, it is a testament to the strength, not weakness, as is so often portrayed in medical and research journals and reflected in mainstream media reports, that First Nations peoples are able to balance a different worldview and carry on despite economic, political and social forces that seem intended to eradicate their unique world views. First Nations cultural and spiritual understandings find expression in timeless political and governance structures, belief systems and world-views that are both unique and valuable resources contributing to the biodiversity of mankind.

A Medline search of 254 journal articles published during 1992-2001 found that the majority of papers does not reflect the demographic composition of Aboriginal people in Canada, with severe under-representation of Métis, urban Aboriginal people, and First Nations people not living on reserves and over-representation of the Inuit (Young 2003). Children and women received less attention proportional to their share of the population. A few prolific research groups have generated a disproportionate amount of publications from a few communities and regions. 174 papers dealt with health determinants (for example, genetics, diet, and contaminants), 173 with health status, and 75 with health care. Injuries, which account for a third of all deaths, were studied in only 8 papers. None of the health care papers examined rehabilitation. The paper concludes that an explicit process for prioritising research is needed, such as that proposed by the Global Forum for Health Research.

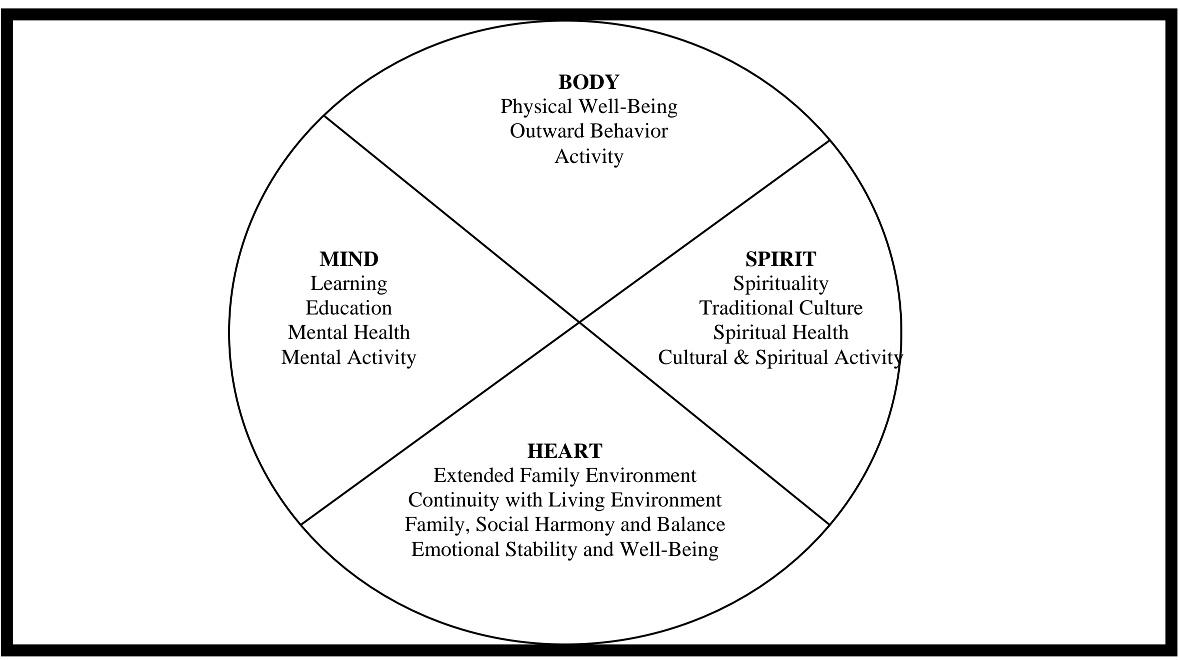
> "There is a widely-acknowledged lack of data on the health status of Indigenous peoples. Indigenous communities and organizations are calling for more research to assess or measure the impact of interventions to reduce inequalities and to inform their own ideas about the health challenges they face. Research is crucial to support advocacy for the development of more appropriate and effective health services for Indigenous peoples. It can be used to support advocacy on land and civil rights, and to mobilize people towards community empowerment and organization." (Watch 2005)

The ancient wisdom of the Elders is vanishing on a global scale. First Nations language and the social-cultural fabric of First Nations communities are being eroded with major losses to traditional healing and medicine, spirituality, environmental stewardship, land use, language and unique First Nations world-views.

The Canadian Institutes of Health Research (CIHR) took a bold step by creating the first ever National Institute of Health Research to dedicate its efforts on improving the health and well being of Indigenous peoples in Canada and abroad ((Reading 2003), (Reading J 2002)). "National Indigenous health research as a catalyst for development. Canada has a research institute dedicated to supporting and funding Aboriginal health research and capacity building – the Institute of Aboriginal Peoples' Health (http://www.cihr-irsc.gc.ca/e/8668.html). Some of its aims are to support ethical and innovative research that is responsive to Indigenous health priorities; to support research that contributes to the improvement of the health of vulnerable populations worldwide; to engage with the general public about the challenges of improving Indigenous health; and to accelerate the transfer of research within and between communities**."** (Watch 2005). CIHR has also initiated several international Indigenous health research agreements and development of specific Ethical Guidelines for research involving First Nations, Inuit and Métis peoples (further described in Appendix A).

Created from within the First Nations community, there also has been the development of the First Nations Regional Longitudinal Health Survey (RHS). This ten-year effort is the largest national First Nations-led research initiative, which comprises 22,462 surveys completed among adults, children and youth living in First Nation communities. A Cultural Framework was

developed for the RHS to guide the analysis and interpretation of the survey data. The framework is based on the concepts of Total Health, Total Person and Total Environment. The Total Person model has the four components of Body, Spirit, Mind and Heart (extended family environment, social harmony, emotional stability etc.). The RHS has also developed, in collaboration with First Nations leaders across Canada, a ground-breaking Code of Research Ethics grounded in key principles of Ownership, Control, Access and Possession of First Nations data. These principles are intended to express First Nations' collective rights to self-determination in the areas of research and information governance.



2. Social Determinants of Health

That population level factors which determine health and well-being for any collectivity have their origins in upstream historic, cultural, social, economic and political forces affecting the lives of First Nations peoples, has been articulated for almost a decade ((Young 1988), (Young 1994); (INAC 1996)).

Health determinants are connected to health, but often, beyond the domains of improvement that can be provided by health care system interventions. This idea is clearly articulated in a great

number of studies that, for example, investigate how health issues relate to changing traditional diets in the North (Nakano T, et al, 2005). Studies have also examined how various external factors can create undue psychological stress,((Karmali S. Laupland K 2005) (Mignone and O'Neil 2005), (Iwasaki, Bartlett et al. 2004), (Iwasaki, Bartlett et al. 2005) which lead to higher risks of preventable injury from a variety of causes (Allard, Wilkins et al. 2004). On the positive side, an important study indicates that creating opportunities for healthy living to address the more positive aspects of lifestyle such as physical activity, recreation and leisure may hold promise for improvements in tobacco smoking rates, particularly among Indigenous youth (Ritchie AJ 2004)).

To assess determinants of health, composite social indicators incorporate measures of both social and economic well-being into a single overall measure of a population's well-being. One of the more widely used ones is the United Nations Development Programme Human Development Index (HDI), (UNDP 1990). The HDI is composed of three dimensions that attempt to assess those factors necessary for a rewarding and fulfilling life: longevity as determined by life expectancy at birth, educational attainment as measured by the adult literacy rate and gross enrolment ratio, and adjusted GDP per capita. These three dimensions are combined into one overall indicator that can be used to compare countries, or additionally, the index can be used for regions, gender or ethnic groups within countries (UNDP 1990). The composite score ranges from zero to one with one being the best score possible.

The HDI methodology was modified so that it could be applied to the First Nations population in Canada. Using the modified HDI, the First Nations population scored lower than the general population for the years 1981 to 2001 with the gap being significant at 0.18 in 1981, decreasing to 0.12 over a twenty year period in 2001.

While Canada as a whole regularly places in the top five nations in the world in terms of the HDI, the First Nations population in Canada was ranked 63rd using the HDI. This gap indicates a tremendous differential in the well being of these two groups (AFN 2005).

The Community Well-Being (CWB) index is a composite indicator developed specifically with First Nations communities in mind. The CWB incorporates elements of the HDI and is calculated from census data. The four dimensions of the CWB are education, labour force participation, income, and housing. The CWB was applied to all Canadian communities (First Nations and non-First Nations) with 65 or more residents. Similar to the HDI, the CWB indicate the disparity between First Nations communities and the rest of Canada: only 1 of the top 100 communities was a First Nations community while 92 of the bottom 100 were First Nations communities (McHardy M 2004).

The pattern of profound disparity which places Indigenous peoples in a highly vulnerable category is thought to be true, not only for developed countries, but includes so-called low and middle-income nations ((Stephens C 2005); (Watch 2005)).

Evidence demonstrating how investments in heath determinants can translate into long-term cost savings for the health system is scarce. This is partly due to the lack of implementation of population health initiatives from which this evidence could be gathered. However, it is possible to extrapolate from the higher rates of utilization and expenditures incurred by First Nations compared to average Canadians that substantial savings would result from addressing the root causes of chronic and communicable diseases. For instance, First Nations diabetes is known to create an ‘excess cost’ that far exceeds the mainstream basis of funding for health care in some regions. This leads to inherent under funding and overburdened health systems (Jacobs 1998). Excess hospital costs incurred by provinces for First Nations clients in 2003/04 are estimated at $383.3 million.[1] Broken down by residency, this amounts to $239.3 million for First Nations living on reserve and $144.0 million for those living away from their reserve.

[1] Estimate is based on First Nations specific statistics for hospital services available in five provinces (ON, BC, SK, AB, MB). These five provinces account for 83.3% of the Indian Register population in Canada. Census 2001 provincial/territorial populations and CIHI hospital data for 2003/04 were also used.

2.1 Socio-Economic Status Tied to Health Disparities

> "Life expectancy is shorter and most diseases are more common further down the social ladder in each society" (WHO 2003)…The longer people live in stressful economic and social circumstances, the greater the physiological wear and tear they suffer, and the less likely they are to enjoy a healthy old age" (WHO 2003).

Worldwide recognition of the association of socio-economic status (SES) and health, well-being and a longer life has been conclusively demonstrated and is regarded as the most important social determinant of disease (Marmot 1987; Smith, Hart et al. 1997; van Rossum 2000; Smye and Browne 2002; Syme 2004). The question of how SES affects health status has been extensively studied in the last three decades. It has been suggested that the "control of destiny, the ability to deal with the forces that affects their lives," is the key component of SES (Syme 1989; Marmot 1998; Syme 1998; Syme 2004; Marmot 2005). "Control of destiny" was found to be lower in the lower status groups (Marmot 2005). In other words, people from the lower socio-economic class have less opportunity and training to influence the events that impinge on their lives (Syme 1998). This theory has been supported by neuroendocrinological studies, which have shown that lack of control over life circumstances creates a load of stress on the body, which may eventually result in the development of a variety of diseases and conditions, especially insulin dependent diabetes, cardiovascular diseases (Mc Ewan 1998; McEwen 2006), alcoholism and suicide (Syme 1998).

The concept of control of destiny proposed by Marmot and Syme can be applied to First Nations peoples to better understand the association between SES and their current health status. As a result of colonization, First Nations peoples lost control of their destiny, placing great stress on communities and individuals. They were forced to adapt to an unfamiliar culture that was systematically racist and discriminatory. While some changes have occurred, Indigenous populations in developed countries are still "a socially excluded minority within their countries" (Marmot 2005) and "over-represented in lower SES strata" (Valery 2006).

Relating back to the link between SES and life expectancy (WHO 2003), in Canada, the life expectancy at birth for the "registered Indian" population remains lower than that of the general Canadian population: 68.9 years for males and 76.6 years for females in 2000, a difference of 7.4 years between Aboriginal and non-Aboriginal males and 5.2 years between Aboriginal and non-Aboriginal females (Health Canada 2005).

The measure of socio-economic status is a complex mix of factors which includes employment, income and self-determination for Indigenous peoples. The Harvard Project on American Indian Economic Development has concluded that: "A decade of Harvard Project research has been unable to uncover a single case of sustained development that did not involve the recognition and effective exercise of tribal sovereignty: the practical assertion by tribes of their right and capacity to govern themselves. There is a major policy lesson here. (…) The reinforcement of tribal sovereignty should be the central thrust of public policy" (Cornell and Kalt 1998).

While there are not data available that categorize First Nations by SES categories comparable to that found in research on other populations, employment, education and income data are available. The most recent and widely respected data are from the First Nations Regional Longitudinal Health Survey 2002/03 which was a population based sample of First Nations across Canada. The results from this survey can be used to compare First Nations to the Canadian population (RHS 2002/2003).

First Nations adults were less likely to be employed than the Canadian population, with 48.8% of First Nations 18 years of age and older employed compared to 57.0% of Canadians 15 years of age and older. Incomes for First Nations people are also much lower than those of the Canadian population. The median personal income for individuals living in First Nations communities was $15,667 (no significant difference between men and women) while that of Canadian men was $40,000 and $24,800 for women. In addition, 42.0% of First Nations/Inuit earn less than $15,000 per year compared to only 27.7% of the general Canadian population. These results show that First Nations people are less likely to be employed and, when employed, are earning much less than the Canadian average.

Education levels in First Nations populations lag behind that of the Canadian population. In the adult First Nations population 36.3%, have less than a high school education compared to 22.5% in the overall Canadian population. Within the First Nations population, there is a strong relationship between level of education, employment and health care access.

The higher the level of education, the more likely it is that a person is employed. Only 34.3% of those with less than a high school education were employed, rising to 59.2% for those who had graduated from high school, to 65.6% for those with a diploma, and 83.0% for those with a university degree (RHS 2002). This impact of education is reflected in barriers to health care; the proportion of First Nations individuals reporting barriers to accessing health care is much higher in those with lower levels of education. For example, 50.5% of First Nations people with less than a high school education could not afford the direct cost of care compared to only 4.8% of those with a university degree.

The effects of the combination of poverty and social disadvantage in First Nations peoples can be seen in many diseases. For example, First Nations people have a significantly higher prevalence of carotid atherosclerosis and cardiovascular disease and associated risk factors (smoking, glucose intolerance, and obesity) (Anand et al 2001, Anand, S. et al. 2006). The authors suggest that the higher prevalence of disease may be a connected to the significant proportion of Aboriginal people live in poverty, which is then associated with high rates of cardiovascular disease and associated risk factors. Improvement of SES might be a key to reduce cardiovascular disease among First Nations (Anand, Yusuf et al. 2001).

2.2 Addressing Social Determinants of Health

The question of how to approach social determinants of health is much debated. Some authors, like Michael Marmot, suggest that the focus of disease prevention should move away from specific risk factors, such as smoking, high-blood pressure, substance abuse, etc, to community and social forces that affect each individual in the society. These social forces are referred to as the "causes of causes" and should be considered during investigation of any disease (Marmot 2005). According to Marmot, "If the major determinants of health are social, so must be the

remedies”. Therefore, the relationship between health status and SES should be of concern to all policy makers, not merely those within the health sector (Marmot 2005).

One way to address the issue of low SES is through education of children from poor disadvantaged families thus providing them with the skills to approach and solve life problems (Syme 1998). Studies been conducted, including 10 and 20-years follow-up studies, the success of such an approach. For example, a national program in the USA , “Headstart,” demonstrated promising results: double the high school graduation and college admission, half the welfare, half the crime rate, half the teenage pregnancies (Syme 1998). In Canada, education has also been recognized as a major factor in First Nations well-being, and accounted for 59.5% of improvements in the overall Human Development Index between 1991 and 2001 (INAC 2004). Clearly, developing strategies that speak to children and youth are crucial, as is targeting parents, where lifestyle patterns are mimicked and issues of socioeconomic status are transmitted (Syme 1989; Syme 2004; Marmot 2005). Since “it takes a community to raise a child”, not only parents but also communities are responsible for a child’s health and well-being (Canada 2001).

Appendix B outlines in greater detail First Nations-specific data, to the extent available, establishing direct correlations between social determinants and health status in the areas of: early life (prenatal health and development, maternal smoking, antenatal influence of alcohol and drugs, other maternal influences, breastfeeding), child health (cultural continuity, smoking, nutrition, obesity), education (residential schools legacy, elementary, secondary and post-secondary), addictions, housing, food security, and health care access. Furthermore, recommended interventions are proposed where possible. However, to illustrate the importance of a specific social determinant of health among First Nations peoples, the determinant of Social Support and Exclusion is discussed within the body of the paper in the following section.

A Case in Point: The Influence of Social Support and Social Exclusion

Social support and good social relations make an important contribution to health. According to the WHO, friendship, good social relations and strong supportive networks improve health at home, at work and in the community (WHO 2003).

First Nations people continue to struggle with issues affecting their mental health and personal wellness. They are challenged in the process of accessing support and services, and consistently encounter more obstacles to access than the broader Canadian population. Although the majority of respondents to the 2002/2003 RHS reported feeling in balance physically, emotionally, spiritually and mentally, the population is still challenged with issues regarding suicide.

The findings of the RHS support that people who are in balance seek personal and emotional supports from immediate family members or traditional healers, while those who are feeling sad or depressed are more likely to report using mainstream mental health and emotional supports almost exclusively (RHS 2002/2003).

Support operates on the levels of both the individual and society. People who get less social and emotional support from others are more likely to experience less well-being, more depression, a greater risk of pregnancy complications and higher levels of disability from chronic diseases. In addition, bad close relationships can lead to poor mental and physical health (WHO 2003).

The amount of emotional and social support people acquire will vary by SES. Poverty can contribute to social exclusion and isolation. Societies with high levels of income inequality tend to have less social cohesion and more violent crime (WHO 2003). According to the WHO, a study of a community with initially high levels of social cohesion showed low rates of coronary heart disease. When social cohesion declined, heart disease rates rose (WHO 2003).

In particular to First Nations communities in Canada, social cohesion faced a major decline during the period of residential schooling and, in the longer term, due to colonialism. It can be asserted that various types of trauma are contributing factors to First Nations peoples' experience of poor mental health, personal wellness, and access to supports. This prevalence of trauma may be attributed to the intergenerational effects of colonialism. For example, the First Nations Healing Foundation Mental Health Profile Report states that: 100% of the case files reported sexual abuse at residential school; 90% reported physical abuse; 75% reported alcohol abuse; and 21.1% reported major depression.

In addition, the 1997 RHS reported that about 18% of the First Nations adult population surveyed met the criteria for major depression; 27% reported problems with alcohol; 34% reported sexual abuse during childhood; and 15% attempted suicide at some time in their lives (RHS 2002/2003).

Roughly 60% of respondents sought emotional or mental support from immediate family and friends followed by other family members (44.7%), family doctor (24%), and traditional healers (15%). Critical to note is that only 5% sought support from a psychiatrist and/or psychologist, while roughly 2% received support from a crisis line worker (RHS 2002/2003) – this may be a symptom of inadequate access to appropriate mental health services.

According to the RHS report, over 61% of respondents felt they always have someone to show them love and affection. Over half of the respondents felt they always have someone who will take them to a doctor (51.8%), or someone to do something enjoyable with (50.2%). Unfortunately, the availability of someone who can always give them a break from their daily routines was quite low, at 28.3% (RHS 2002/2003).

The emotional and social well-being of First Nations children is impacted by a variety of factors such as the residential school legacy, importance and participation in cultural and traditional activities, school attendance, activity participation and limitations, diet and residential school attendance of parents and grandparents. In addition, the social support and well-being of First Nations' children is impacted by their parents' socio-economic status and educational attainment (RHS 2002/2003). The higher the level of education attained by parent(s), the more likely First Nations children will eat well, be less likely to have behavioral problems, be involved in reading activities everyday and be in good general health.

Children are the future of First Nations communities. Therefore, understanding their experiences with social support and exclusion will help First Nations communities to build strong families and relationships for the future.

The majority of First Nations youth self-report as doing well in terms of their mental health, social support, and personal wellness (RHS 2002/2003). Notwithstanding, many First Nations youth feel sad or depressed, which can sometimes lead to suicidal thoughts and actions (RHS 2002/2003). One in five First Nations youth respondents of the 2002-03 RHS had a close friend or family member commit suicide in the past year. By age 12, 1 in 10 First Nations youth have thought about suicide at least once in their lifetime. This rate climbs to 1 in 3 at 17 years of age. For First Nations youth who had at least one parent that attended residential school, more than 1 in 4 (26.3%) have thought about suicide, compared to only 18% of those youth whose parents did not attend residential schools (RHS 2002/03).

There is also a vitally important gender difference. First Nations girls are twice more likely than boys to consider suicide. This dangerous pattern is also seen in adulthood. Nearly 1 in 5 First Nations women have attempted suicide at least once in their lives; over 40% higher than men (RHS 2002/03).

When First Nations youth are in need of assistance in dealing with problems they face, they most often turn to their parents or guardians, friends their own age, or no one at all. The proportion of youth who report having difficulties with their mental health is greater than those who appear to be accessing either Western-based mental health services or consulting with traditional healers. Therefore, service providers within communities are not getting an opportunity to provide help when it is most needed (RHS 2002/2003).

An important factor that may impact mental health and social support is one's experience with racism and exclusion. According to the RHS 2002/03 report, 37.9% of First Nations respondents have experienced instances of racism in the past 12 months (RHS 2002/2003). Racism is closely connected to the social determinants of health and well-being. If a person is experiencing racism, they are most likely feeling socially excluded, which will negatively impact their ability to access health and well-being.

Racism is also connected to education, employment and access to health care. Those less educated and those employed are more likely to have personally experienced racism (RHS 2002-

03). Adults who have experienced racism are more likely to report virtually all barriers to health care access. Those who had experienced an incident of racism are also more likely to deem traditional cultural events and traditional spirituality as very important (RHS 2002/2003).

For First Nations peoples, the path to community wellness is to be found within a wholistic paradigm that includes the mental, physical, cultural and spiritual well being of both the individual and the community. "The Western biomedical model, premised on European cultural constructs, does examine some determinants of health – such as housing, employment and education – but is unable to absorb the negative health impact of colonialism and is culturally limited in its definition of wellness." (Need a ref here for this quote) Voyle and Simmons (1999) believe that "…alienation and marginalization within their own countries have had deleterious consequences for [First Nations] cultural traditions and identity, social cohesion and self-esteem. There is no doubt that colonialism has had both direct and indirect negative consequences for First Nations peoples' health" (RHS 2002/2003). The RHS has demonstrated that indicators for community wellness include knowledge of traditional language, knowledge of the land, shelter and healing medicine (RHS 2002/2003).

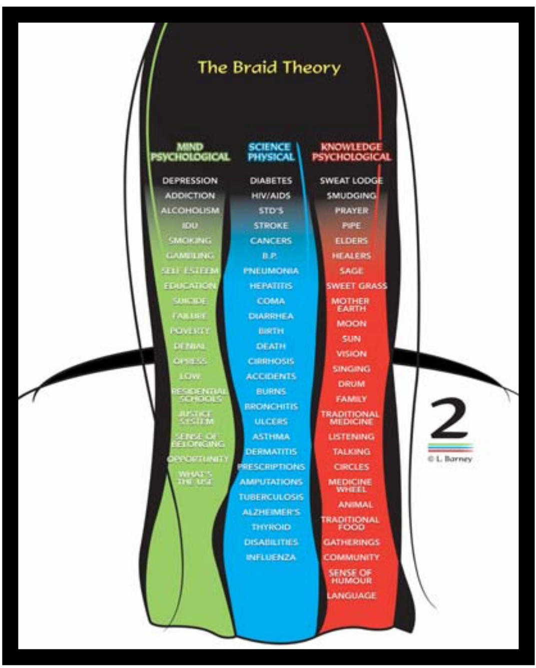
Access to appropriate mental health support must be improved to benefit the mental health and well-being of First Nations peoples. An overall goal of supporting balanced lifestyles also needs to be considered. Historical factors affecting the mental health and overall social support of First Nations communities have gained attention through various initiatives, such as the Aboriginal Healing Foundation. However, data documenting the state of mental health and social inclusion of First Nations people are extremely limited, in comparison to the mass of data available regarding the general Canadian population (RHS 2002/2003).

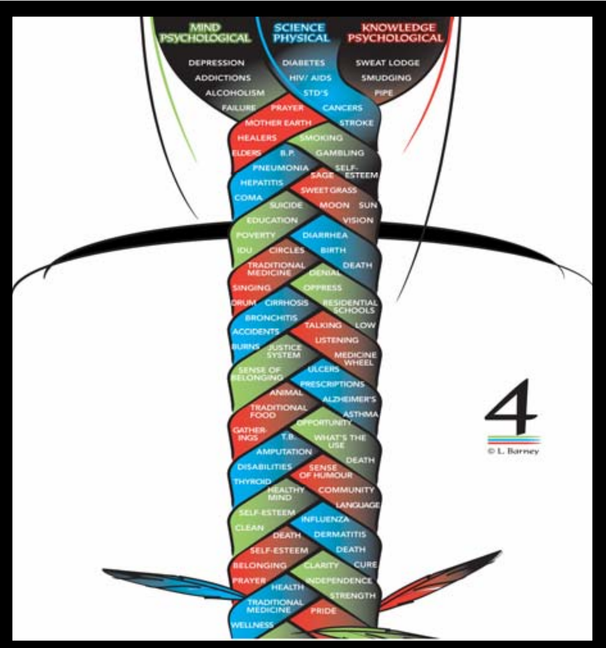
One of the overall barriers to social support seems to be the presence of racism in a variety of social contexts. Attention should be devoted to racism awareness in the workplace, as a large number of First Nations people working for pay and working multiple jobs, experienced far more instances of racism than those who are not working for pay.

In addition to friends and family members acting as key social support figures, family doctors rank highly as important and readily relied upon resources for First Nations people seeking support. For this reason, family doctors should be suitably prepared to engage as integral components in supporting the mental and emotional health of First Nations people (RHS 2002/2003).

> “The wellness of a First Nations community can only be adequately measured from within a First Nations knowledge framework. First Nations knowledge, a wholistic framework, measure all levels of the well-being – including spiritual, emotional, physical and social balance – in order to accurately represent health and community wellness. Data gathered from the 2002/2003 RHS shows some progress in the areas of traditional activities, healing and cultural esteem. However, only an increase in traditional medicine practices and culturally sensitive healing and knowledge paradigms will improve community wellness, including culture and self-esteem, among First Nations peoples and their communities” (RHS 2002/2003).

An illustration of health promotion/disease prevention models that foster community wellness at their core is the Braid Theory developed in 2003 by Lucy Barney of the Lillooet First Nation and BC Centre for Disease Control. The Braid Theory has been conceptualized as a means of explaining how healing or prevention can occur in the context of HIV/AIDS prevention. The Braid Theory illustrates the combined impact of three strands: Mind, Body and Spirit. As a framework for wellness, braiding the three strands and reflecting this wholistic approach in planning and service delivery are seen by Barney as a means of taking care of oneself, resulting in a shift from a feeling of low self-esteem, depression, poor emotional and mental health, to a feeling of wellness and balance.





Based on evidence reviewed, it is further recommended for youth social support that the focus of programming needs to change to a more wholistic and traditionally consistent pattern of fulfilling extended family and community roles. Additionally, communities should be supported to develop strategies that will improve the extent to which youth access these more broadly defined mental health services (RHS 2002/2003).

3. First Nations Wholistic Policy and Planning Model

Adopting a social determinants of health lens for the Canadian federal, provincial and territorial systems highlights even more dramatically the gap between Canadian and First Nations' well-being. During the last decade some innovative studies grounded in health determinants approach have surfaced to measure this gap.

3.1 Population Health Models Applied to First Nations

In 1996, the Royal Commission on Aboriginal Peoples noted that socio-economic factors are important health determinants, but criticized the “individual-level” analyses of socioeconomic variables (such as income and employment) found in most health studies. It was argued that these analyses do not capture the complexity and impact of community-level factors and not reflecting the importance of ecological (or contextual)-level data (Mignone 2003).

The University of Manitoba’s Centre for Aboriginal Health Research has shown how the concept of “social capital” can be used as a key health determinant for First Nations. Mignone and O’Neil propose using social capital as a means of characterizing First Nations communities according to the degree to which resources are socially invested (Mignone and O'Neil 2005). Social capital is measured using a combined scale that incorporates the concepts of bonding (relations within the community), bridging (relations with other communities), and linkage (relations with formal institutions) (Mignone and O’Neil 2005).[2] The social capital model resonates with the National Forum on Health’s recommendations with respect to Aboriginal communities in that the Forum acknowledged that the lack of a flexible, accepting and responsive external environment was a significant barrier to achieving a wholistic approach to Aboriginal well-being.

Similarly, Chandler and Lalonde focus on defining factors intrinsic to the notion of cultural continuity, which was found in their research to be a significant determinant of youth suicide in First Nations communities located in British Columbia (Chandler and Lalonde 1998). At the time of their research, Chandler and Lalonde identified the following factors as having an impact on suicide in BC’s First Nations communities: self-government, land claims, education, health, cultural practices and police/firefighting infrastructure.

---

[2] As a way to illustrate how social capital can inform policy development, the authors cite a community case study where, as a response to a cluster of youth suicides, a community had identified the need for recreation facilities and programs for children and youth. However, a dispute between First Nations leadership, Indian and Northern Affairs Canada and the construction company prevented the health issue to be addressed.

The federal Ministry of Indian and Northern Affairs Canada (INAC) produced a Community Well-Being Index (CWI) that relies upon four principal indicators, namely, education, labour force activity, income and housing. INAC applied the CWI to 4,685 communities in Canada. Nearly 50% of all First Nations communities occupied the lower half of the index range, compared to less than 3% of Canadian communities. Furthermore, although First Nations communities made up approximately 13% of all Canadian communities, 92 of the "bottom 100" Canadian communities in 2001 were First Nation. One First Nation ranked among the "top 100" Canadian communities.

3.2 Nation-Building as Foundation of First Nations Policy Development

While the social determinants of health approach is relevant to policy discussions on First Nations well-being, to maximize its relevance, it is crucial that this approach be implemented in accordance with the values, attitudes and aspirations of First Nations peoples. According to Folke et al, Indigenous populations adopt a "learning by doing" approach that relies on multi-generational knowledge accumulation and responds to environmental feedback. For this reason, they are better adapted to long term survival and should guide policy frameworks relating to sustainable development (Folke 2002).

For instance, the Maori Peoples of New Zealand have sought to incorporate the concept of *Mauri* – the binding force between the physical and the spiritual, including the balance between social, economic, environmental and cultural well-being - in all federal health and public health policies. The *Mauri* Model is based on four circles that represent the interactive aspects of the ecosystem, redefined as the impacts on the *Mauri* family/*whanau* (economic), community (social), clan/*hapu* (cultural), and ecosystem/*taiao* (environment) respectively (Morgan 2005).

First Nations traditional knowledge and healing practices are perhaps the quintessential expressions of a social determinants of health approach. This reinforces the need to consider a blend of traditional and Western practices in program and services delivery aimed at First Nations. While traditional practices vary greatly across the diversity of First Nations in Canada,

many are based on the belief that each individual has his/her own constitution and social circumstances that result in different reactions to the “cause of diseases” and “treatment”. As noted by Marie Battiste and Sakej Henderson:

> *The traditional ecological knowledge of Indigenous people is scientific, in the sense that it is empirical, experimental, and systematic. It differs in two important respects from western science, however; traditional ecological knowledge is highly localized and it is social. Its focus is the web of relationships between humans, animals, plants, natural forces, spirits, and the land forms in particular locality, as opposed to the discovery of universal law (Battiste M 2000).*

Incorporating traditional knowledge of First Nations in foreign government policies, programs and services is a rare and daunting challenge. Notwithstanding, the AFN has outlined a successful policy development approach that begins with the imperative that the approach must be First Nations driven and consistent with First Nations' rights, interests, knowledge, traditions and beliefs.

> “Clearly, for a policy initiative to be successful, it must both respond to and be directed by First Nations. In other words, First Nations must have a central role in directing change in order to achieve sustainable solutions. Also, past experience has demonstrated that all parties involved in a process of change must secure clear political commitment and mandates for change. Finally, it appears that joint or shared discussions and dialogue are the necessary vehicles to arrive at innovative, accountable and sustainable solutions. (AFN 2006)”

The recognition and implementation of First Nations governments must be the central policy thrust, as confirmed in the Harvard Project and other key studies. In March 2005, by Chiefs-in-Assembly Resolution, First Nations leaders agreed on an approach forward involving two main domains of policy reform:

1. **RECOGNITION and RECONCILIATION:**
    - Policy development must be in accordance with section 35 Aboriginal and Treaty rights;
    - Harmonization agreements must be negotiated to deal with practical implications (including standards and integrated services across jurisdictions;
    - Incorporating provincial laws/ standards is rejected by First Nations leaders.

2. **IMPLEMENTATION and INVESTMENT:**
    - Accordingly, significant policy review and changes in structure are required:
    - To reform claims policies and processes;
    - To reform self-government policy;
    - End fiscal discrimination (arbitrary budget caps) and replace with fiscal transfers equitable to those received by provinces and territories;
    - Support for capacity building for First Nation governments to secure First Nations health and safety.

As demonstrated in the above, First Nations leadership has aimed to elaborate a comprehensive, rights-based and wholistic approach to its political platform. In 2003, the National Chief announced the Getting Results Strategy, whose policy development cycle and priorities emphasized the social determinants of health. This wholistic approach resonated most with the launch of the Ten-Year Challenge to Close The Gap in Quality of Life between First Nations and Canadians which inspired targets and commitments in the historic 2005 First Ministers Accord on Aboriginal Issues. Regrettably, this Accord – while initially funded at $5.1 billion – has not been honoured by the Canadian Government due to the outcomes of a federal election which caused a change in the leading political party.

In 2006, the Assembly of First Nations launched a First Nations-specific public education and awareness campaign entitled *Make Poverty History: The First Nations Plan for Creating Opportunity* as a means to creating a greater understanding about poverty as a well-known social determinant of First Nations health.

Also in 2006, the Assembly of First Nations' Women's Council initiated the development of a culturally-relevant Gender-Balanced Analysis Framework (GBA). Despite the adoption of the principles of GBA since the early 1980's and 1990's, inequalities among women and men still exist in Canada. Discrimination continues and violates women's human rights creating unsafe environments for women and their children. The harm done to families is perpetuated through generations, leaving communities further impoverished but also reinforcing other forms of violence (AFN 2007).

The inequalities are that much greater for First Nations women in Canada. In fact, First Nations women continue to face barriers where they are unable to fulfill their potential. In large part, to discriminatory legislative and policy parameters, such as the Indian Act, Bill C-31 and Matrimonial Real Property Rights contribute to the entrenchment of poverty among First Nations women (AFN 2007).

The Assembly of First Nations believes the need for GBA, as a policy and program analytical framework, continues but in a form that makes sense to the cultural diversity among and within First Nations communities. AFN is working within a First Nations context that includes a cultural worldview to restore and remember historical gender- balanced roles between men, women, boys, and girls.

As part of a Gender-Balanced approach, some key values have been identified which resonate with the AFN's overall Nation-Building policy development approach and the recognition of social determinants of health.

- **"Holism** – Policies will recognize the whole person, recognizing the relationship of spiritual, emotional, mental and physical health within the individual and the importance of family and community.

- **Voice** – First Nations will be given a voice in decision making and opportunities to participate in processes that supports sustainable communities.

- **Equity** – Sustainable First Nations communities should be provided services and resources to compensate for historical and social injustices, aligned with Aboriginal and Treaty rights. Outcomes achieved should be in line with those available for other Canadians. Equity leads to Equality.

- **Cultural Diversity** – Sustainable First Nations communities must be founded on a respect for cultural diversity. Cultural Diversity is strongly linked to Equity.

- **Control** – Sustainable First Nations communities should be controlled by First Nations themselves, not imposed from the outside.

- **Cultural Identity** – Services and policies will recognize and affirm the cultural identity of First Nations. (AFN 2007)"

3.3 AFN's First Nations Wholistic Policy and Planning Model

The Assembly of First Nations is taking a lead role in identifying social determinants of First Nations health in order to address issues beyond the focus on health service delivery. In reviewing international and national models, and building on its existing work, the AFN proposes a **First Nations Wholistic Policy and Planning Model**.

The model is unique to the extent that it emphasizes the significance of self-government as the underpinning framework for First Nations social determinants of health. The model places community at its core. In a study of various healing modalities utilized by First Nations, a common thread was pinpointed as the positioning of the individual in the context of the community, with all modalities evolving from this premise (McCormick 1995/6).

The Medicine Wheel's influence is also prominent in the model, with the four directions clearly articulated as spiritual, physical, mental, emotional and cultural, economic, social, environmental. These directions constitute domains from which the identification of appropriate

sub-components can be increasingly operational, i.e., increasingly able to measure and/or influence determinants through indicators. Governance, for example, may be one component of the social domain, itself sub-divided into Self-government, Fiscal Relations, Collective and Individual Rights and Capacity.

As well, the importance of relationships within, between and outside the community is reflected in the three components of social capital, namely, bonding, bridging and linkages respectively.

In summary, the model has the following key characteristics:

- Community at its core;
- Components of the Medicine Wheel Spiritual, Physical, Emotional and Mental;
- Four cycles of the lifespan (child, youth, adult, elder);
- Four key dimensions of First Nations self-government (self-government/jurisdiction, fiscal relationships/accountability, collective and individual rights, capacity/negotiations);
- Social determinants of health;
- Three components of social capital (bonding, bridging, and linkage).

Bonding
Relations within the community

Bridging
Relations with other communites

Linkages
Relations with formal institutions

Self Determination
Housing
Environmental Stewardship
On/Away from Reserve
Social Services
Health Care
Justice
Employment
Gender
Economic Development
Life Long Learning
Lands & Resources
Languages, Heritage & Culture
Urban/Rural

Self Government / Jurisdiction
Fiscal Relations/Accountability
Collective & Individual Rights
Capacity/Negotiations

Elders
Child
Youth
Adult

Cultural
Economic
Social
Environmental
Physical
Mental
Spiritual
Emotional
Community

Legend
Medicine Wheel
Lifespan
First Nations Self-Government
Health Determinants
Social Capital

Any framework will almost certainly result in the identification of more health determinants than can be reasonably measured. Health determinants must, therefore, be prioritized based on their importance, their current level of impairment or threat, the ability to affect a change in them, and measure/monitor their impacts. These selection criteria will, ideally, result in a set of determinants with major impacts on health, for which there is a reasonable likelihood of achieving improvement in 10 years.

Policies targeting these determinants should then be developed and monitored to ensure they result in positive changes. The overall Nation-Building framework approved by First Nations leaders in 2005 to recognize and implement First Nations governments remains the foundation for successful application of the model.

4. Six Challenges to Enhance Knowledge on First Nations Social Determinants of Health

The proposed **First Nations Wholistic Policy and Planning Model** reinforces the need for a long-term process for building a better relationship between First Nations and the Government of Canada that is based on Reconciliation and Recognition. History has shown that economic injustices are typically addressed through policies of redistribution, ranging from subjective investment to democratic decision-making. In parallel, cultural injustices have called for policies of recognition. Fundamental change required to address the social determinants of health can only be derived from bridging this redistribution-recognition divide in an approach that corrects inequities by restructuring the underlying framework that generates them (Fraser 1997).

It is the AFN's position that First Nations must make up "strong publics" in the Canadian public sphere. First Nations must translate the wholistic model into authoritative decisions, particularly by achieving the underpinnings of Nation-Building and self-government – key to the model's success in addressing health determinants. In so doing, First Nations communities and institutions must be recognized as an equal partner in the implementation of outcomes and beyond, for any meaningful gains to be reached.

This model represents a framework for which First Nations, federal, provincial and territorial authorities can deliver supports in a cooperative and coordinated manner to address the social determinants of health. A number of key recommendations relating to pursuit of an advanced knowledge agenda in this regard, driven by First Nations, are presented here by the authors that aim to support a First Nations community centred approach to improving health and well being:

1. Seek commitment to a **multi-year dialogue to explore common issues and agendas for action in First Nations health and well being**, with a focus on increasing mutual understanding, and evidence-based action, as a result of comparative analyses of health policies, programs and services for First Nations communities.

2. A need exists to **stimulate and sustain First Nations health research** that capitalizes on key scientific opportunities, addresses important and emerging health issues of concern, and contributes to the health of a First Nations society; support excellent, ethical and innovative research responsive to First Nations community research priorities; and increase support for research that contributes to the improvements in the health status and factors that determine the health and well being of vulnerable populations.

3. Facilitate and accelerate **the dissemination, transfer and translation of knowledge into potential applications and benefits through policies, interventions, services and products**. Establish and maintain continuous contacts with policy and research organizations and individual policy-makers and researchers in the field nationally and internationally and with First Nations communities, to conduct consultations, to advertise and publicize, and to participate in various global fora and conferences.

4. To accelerate processes leading to the beneficial use of knowledge in key areas: (1) **public exposure and championing** of the First Nations health issues, policy making and research through national and international recognition of First Nations research, policy development approach and knowledge as an authoritative source of information and advice, connect with opinion leaders to describe research findings from key projects and explain how the research

will be translated into policies and services to benefit First Nations and non-First Nations communities; (2) **Accelerate transfer of policy, research results and technology within and between the communities** by establishing network linkages and partnerships that facilitate dissemination and exchange; and (3) Support and participate in activities to promote rapid knowledge translation to **develop innovative policy and strategic interventions** aimed at improving the health and well being of First Nations peoples worldwide.

5. To discuss Canadian First Nations contributions and visibility in health policy making and research, outline support needed for selected, **large-scale international initiatives** where First Nations policy analysts and researchers lead or make a unique contribution to efforts; increase the number of bi- or multilateral collaborative agreements with political and research agencies, First Nations communities and Indigenous communities in other nations, in priority areas defined by First Nations peoples; and improve opportunities for First Nations to participate in activities funded by international agencies, including providing support for establishing collaboration, First Nations health policy/research capacity development and developing First Nations health research proposals. This would include building and enhancing the First Nations health human resource capacity through international infrastructure of training and retention programs, development of innovative options and tools, implementation of awareness and grantmanship initiatives, and the development of new study programs.

6. Encourage **multi-lateral collaborative ventures among communities and institutions concerned with improving the health and well being of First Nations peoples.** Promote multi-disciplinary, multi-institutional, and multi-sectored collaborations and to build upon existing networks of policy-makers and researchers to further develop capacities on First Nations peoples' health in areas of mutually shared priorities. Discuss the need for global exchanges, colloquia, and joint training opportunities that would offer health researchers, policy-makers, and practitioners valuable insights into the roots of the very similar health inequalities adversely affecting Indigenous peoples, as well as practical solutions to reduce these inequalities, while improving the health status of the most severely affected populations.

5. Conclusion

A plethora of health indicators demonstrate that First Nations peoples in Canada endure a profound public health and socioeconomic burden when compared to mainstream populations. Such a pattern is observed globally as Indigenous populations are the poorest of the poor and correspondingly vulnerable to high rates of preventable disability, disease and premature death.

Economist Dr. Jeffrey Sachs in his recent book titled 'The End of Poverty' points to poverty eradication as the most important determination of health, because it is through income that other determinants of health are purchased, such as adequate housing, access to health services and education, potable water and nutritious food etc.

For First Nations peoples, poverty reduction is urgent but needs to be combined with measures that lead to improved health and well-being. First Nations communities have much to offer in terms of their unique cultures and traditions passed down from generation to generation. Improving the health of First Nations peoples means respect for community autonomy, support for the legitimate aspirations for self-determination, respect for inherent rights of self government and Treaties, recognition for First Nations knowledge systems and respect for First Nations 'ways of knowing' that constitute an important part of a shared global human biodiversity.

It seems logical to integrate Indigenous knowledge systems into advanced health policy development and research in an effort to combine scientific excellence with community relevance from project design to analysis, interpretation of results and translation of knowledge to policy makers with the aim to improve health.

As the world pursues laudable millennium development goals, the recognition of First Nations ways of knowing and wholistic approaches to health and well-being becomes ever more significant to prevent any further marginalization. Thus, the time is right for a global response to improve the health and well-being of Indigenous peoples in North America and Circumpolar northern countries and indeed, worldwide.

References

Adelson, N. (2005). "The embodiment of inequity: health disparities in aboriginal Canada." Canadian journal of public health. Revue canadienne de sante publique **96 Suppl 2**: S45.

AFN (1994). "Breaking the silence: An interpretive study of residential school impact and healing as illustrated by stories of First Nations individuals."

AFN (2005). First Nations Public Health: A Framework for Improving the Health of Our People and Our Communities, Assembly of First Nations.

AFN (2006). Successful First Nation Policy Development: Delivering Sustainability, Accountability and Innovation, Assembly of First Nations.

AFN (2007). Draft Framework, Gender Balancing: Restoring our Sacred Circle, Assembly of First Nations.

Allard, Y. E., R. Wilkins, et al. (2004). "Premature mortality in health regions with high aboriginal populations." Health Rep **15**(1): 51-60.

Amling, C. L. (2004). "The association between obesity and the progression of prostate and renal cell carcinoma." Urol Oncol **22**(6): 478-84.

Anand, S. S., S. Yusuf, et al. (2001). "Risk factors, atherosclerosis, and cardiovascular disease among Aboriginal people in Canada: the Study of Health Assessment and Risk Evaluation in Aboriginal Peoples (SHARE-AP)." Lancet **358**(9288): 1147.

Anto, J. M., P. Vermeire, et al. (2001). "Epidemiology of chronic obstructive pulmonary disease." Eur Respir J **17**(5): 982-94.

Arnault-Pelletier, V., S. Brown, et al. (2006). "Circle of strength." Can Nurse **102**(4): 22-6.

Baker GR, N. P., Flintoft V, Blais R, Brown A, Cox J, Etchells E, Ghali WA, Hebert P, Majumdar SR, O'Beirne M, Palacios-Derflingher L, Reid RJ, Sheps S, Tamblyn R (2004). "The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada." Canadian Medical Association Journal **170**(11): 1678-1686.

Banks, J. (2003). "A Native Community Rekindles the Traditional Breastfeeding." AWHONN Lifelines **7**(4): 340-347.

Banks, J. W. (August/September 2003). "A Native Community Rekindles the Tradition of Breastfeeding." AWHONN Lifelines **7**(4): 340-347.

Barney, Lucy. "The Braid Theory". http://www.bccdc.org. British Columbia Centre for Disease Control, 2003. Accessed on June 20, 2005.

Barrett-Connor, E. (1989). "Epidemiology, obesity, and non-insulin-dependent diabetes mellitus." Epidemiologic reviews **11**: 172.

Battiste M, Y. H. J. (2000). Protecting Indigenous Knowledge and Heritage: A Global Challenge. Saskatoon, Saskatchewan, Purich Publishing Ltd.

Berghout, J., J. D. Miller, et al. (2005). "Indoor environmental quality in homes of asthmatic children on the Elsipogtog Reserve (NB), Canada." Int J Circumpolar Health **64**(1): 77-85.

Bernard, L., C. Lavallee, et al. (1995). "Overweight in Cree schoolchildren and adolescents associated with diet, low physical activity, and high television viewing." Journal of the American Dietetic Association **95**(7): 800.

Blair, E. (1996). "Why do aboriginal newborns weigh less? Determinants of birthweight for gestation." J Paediatr Child Health **32**(6): 498-503.

British Columbia, C. (2001). The health and well-being of Aboriginal people in British Columbia. B. M. o. H. Planning.

British Columbia, C. (2001). The Health and Well-being of Aboriginal People in British Columbia. **2001**.

Browne, A. J. and J.-A. Fiske (2001). First Nations Women's Encounters With Mainstream Health Care Services. Western Journal of Nursing Research, Sage Publications Inc. **23:** 126.

Campbell, A. (2002). "Type 2 diabetes and children in Aboriginal communities: the array of factors that shape health and access to health care." Health Law J **10**: 147-68.

Canada (2001). Census 2001 Survey. S. Canada. **2001**.

Canada (2005). Fetal Alcohol Syndrome. F. N. I. Health, Health Canada.

Canada, B. C. f. (2002). "Breastfeeding Statement of the Breastfeeding Committee for Canada."

Canada, G. o. (2005). Fetal Alcohol Syndrome. H. C. First Nations and Inuit Health.

Canada, G. o. (2006). Substance abuse issues and public policy in Canada: Canada's federal strategy. P. a. S. A. Division, Government of Canada.

Canada, G. o. (2007). Drug Awareness Service. RCMP.

Canada, H. (2001). It takes a community. F. N. a. I. Branch. **2**.

Canada, H. C. o. (2007). Aboriginal Health: Current Initiatives.

Canada, I. a. N. A. (2003). Water Quality and First Nations Communities (Backgrounder). I. a. N. A. Canada.

Canada, P. H. A. o. (November 1998). "Canada's Perinatal Surveillance System: Breastfeeding."

Canada, S. (1998). 1996 Census: Aboriginal Data.

Canada. Health Canada., Canadian Lung Association., et al. (2001). Respiratory disease in Canada. Ottawa, Canadian Institute for Health Information.

Canadian Pediatric Society, C. (2002). "Fetal Alcohol Syndrome." Paediatr Child Health **7**(3): 161-174.

Cardinal, J. C. (2004). First Nations in Alberta, a focus on health service use. Edmonton, Alberta Health & Wellness.

CBC, N. (2003). More chronic illness among off-reserve aboriginals: study.

CBC, N. (2007). First Nations want more cigarettes, cancer society wants fewer.

Chan, A., R. J. Keane, et al. (2001). "The contribution of maternal smoking to preterm birth, small for gestational age and low birthweight among Aboriginal and non-Aboriginal births in South Australia." Med J Aust **174**(8): 389-93.

Chan, A. K., RJ; Robinson, JS. (2001). "The contribution of maternal smoking to preterm birth, small for gestational age and low birthweight among Aboriginal and non-Aboriginal births in South Australia." **174**(8): 389-93.

Chan, K. N., Y. C. Wong, et al. (1990). "Relationship between infant lung mechanics and childhood lung function in children of very low birthweight." Pediatr Pulmonol **8**(2): 74-81.

Chandler, M. J. and C. Lalonde (1998). "Cultural continuity as a hedge against suicide in Canada's First Nations." Transcultural Psychiatry **35**(2): 191-219.

Chandler MJ, L. C., Sokol BW, Hallett D (2003). "Personal persistence, identity development, and suicide: a study of Native and Non-native North American adolescents." Monographs of the Society for Research in Child Development **68**(2): 1-130, discussion 131-138.

CIHI, C. I. f. H. I. (2006). How Healthy Are Rural Canadians? P. H. A. o. Canada, Canadian Institute for Health Information.

Cliver, S. G., RL; Cutter, GR; Hoffman, HJ; Davis, RO; Nelson, KG. (1995). "The effect of cigarette smoking on neonatal anthropometric measurements." Obstet Gynecol. **85**(4): 625-30.

Cornell, S. and J. P. Kalt. (1998) "Sovereignty and Nation-Building: The Development Challenge in Indian Country Today". Joint Occasional Papers on Native Affairs. 2002-03. Reprinted from American Indian Culture and Research Journal. **22**(3): 187-214.

Come, M. C. (2004). Survival in the Context of Mega-Resource Development: Experiences of the James Bay Crees and the First Nations of Canada. In the Way of Development: Indigenous Peoples, Life Projects and Globalization. F. H. Blaser M, McRae G, Zed/IDRC**:** 384.

Coory, M. (2000). "Is birthweight an appropriate health-outcome measure for Torres Strait Islander babies?" Aust N Z J Public Health **24**(1): 60-3.

Cunningham, J., D. W. Dockery, et al. (1995). "Racial differences in the association between maternal smoking during pregnancy and lung function in children." Am J Respir Crit Care Med **152**(2): 565-9.

Daigler, G. E., S. J. Markello, et al. (1991). "The effect of indoor air pollutants on otitis media and asthma in children." Laryngoscope **101**(3): 293-6.

Daniel, M., M. D. Cargo, et al. (2004). "Cigarette smoking, mental health and social support: data from a northwestern First Nation." Can J Public Health **95**(1): 45-9.

DeCourtney, C. A. (2004). "Alaska Natives and Cancer. A.N.T.H.C-C Program, Alaska Native Tribal Health Consortium- Cancer Program."

Delisle, H. F., M. Rivard, et al. (1995). "Prevalence estimates of diabetes and of other cardiovascular risk factors in the two largest Algonquin communities of Quebec." Diabetes Care **18**(9): 1255-9.

Dictionary, C. M. O. R. O. (2002). Fetal Alcohol Syndrome, Oxford University Press, 2002.

Dictionary, C. M. O. R. O. (2002). Obesity, Oxford University Press, 2002.

Dodgson, J. E., L. Duckett, et al. (2002). "An ecological perspective of breastfeeding in an Indigenous community." J Nurs Scholarsh **34**(3): 235-41.

Education, M. o. A. (1998). Ministry of Advanced Education Annual Report 1997-98. T. a. T. Ministry of Advanced Education, Ministry of Advanced Education.

Ellickson, P. T., Joan; Klein, David J. (2001). "High-risk behaviours associated with early smoking: results from a 5-year follow up." Journal of Adolescent Health **28**(6): 465-473.

Ellickson, P. T., Joan; Klein, David J. (2001). "High-risk behaviors associated with early smoking: results from a 5-year follow-up*1." Journal of Adolescent health **28**(6): 465-473.

Ellison, J. A. (2003). "Smokeless tobacco." Oral Surg Oral Med Oral Pathol Oral Radiol Endod **95**(6): 639-640.

Ellison LF, H. M. (1999). "Health consequences of smoking among Canadian smokers: An update." Chronic diseases in Canada **20**(1): 36.

Ellison, M. (1999).

Field, A. C., EH; Must, A; Spadano, JL; Laird, N; Dietz, WH; Rimm, E; Colditz, GA. (2001). "Impact of overweight on the risk of developing common chronic diseases during a 10-year period." Arch Intern Med. **161**(13): 1581-6.

First Nations Regional Health Survey National Steering Committee (1999). National Steering Committee for the First Nations and Inuit Regional Health Survey. Final report.

First Nations Information Governance Committee, First Nations and Inuit Regional Health Survey National Steering Committee., et al. (2004). First Nations and Inuit regional health surveys, 1997: a synthesis of the national and regional reports. Ottawa, First Nations Centre.

First Nations Information Governance Committee (2005). First Nations Regional Longitudinal Health Survey (RHS) 2002-03: Results for adults, youth and children living in First Nations communities. First Nations Information Governance Committee, Assembly of First Nations, First Nations Centre at the National Aboriginal Health Organization.

Folke, L. (2002). Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations. T. E. A. C. t. t. S. Government.

Fraser, Nancy. (1007) *Justice Interruptus: Critical Reflections on the "Postsocialist" Condition.* New York, Routledge.

Fraser-Lee, N. J. and P. A. Hessel (1994). "Acute respiratory infections in the Canadian Native Indian population: a review." Can J Public Health **85**(3): 197-200.

Gilchrist, D., B. Woods, et al. (2004). "Aboriginal mothers, breastfeeding and smoking." Aust N Z J Public Health **28**(3): 225-8.

Gilliland, F. D., K. Berhane, et al. (2000). "Maternal smoking during pregnancy, environmental tobacco smoke exposure and childhood lung function." Thorax **55**(4): 271-6.

Greenwood, M. (2005). "Children as citizens of First Nations: Linking Indigenous health to early childhood development." Paediatric Child Health **10**(9): 553-555.

Grundy, S. M. (2004). "Obesity, metabolic syndrome, and cardiovascular disease." The Journal of clinical endocrinology and metabolism **89**(6): 2595.

Guo, S. S., A. F. Roche, et al. (1994). "The predictive value of childhood body mass index values for overweight at age 35 y." The American Journal of Clinical Nutrition **59**(4): 810.

Halken, S. (2004). "Prevention of allergic disease in childhood: clinical and epidemiological aspects of primary and secondary allergy prevention." Pediatr Allergy Immunol **15 Suppl 16**: 4-5, 9-32.

Hanley, A. J., S. B. Harris, et al. (2000). "Overweight among children and adolescents in a Native Canadian community: prevalence and associated factors." The American Journal of Clinical Nutrition **71**(3): 693.

Hanrahan, J. P., I. B. Tager, et al. (1992). "The effect of maternal smoking during pregnancy on early infant lung function." Am Rev Respir Dis **145**(5): 1129-35.

Harris, S. B., L. E. Caulfield, et al. (1997). "The epidemiology of diabetes in pregnant Native Canadians. A risk profile." Diabetes Care **20**(9): 1422-5.

Harris, S. B., J. Gittelsohn, et al. (1997). "The prevalence of NIDDM and associated risk factors in native Canadians." Diabetes Care **20**(2): 185-7.

Harris, S. B., R. Glazier, et al. (1998). "Disease patterns among Canadian Aboriginal children - Study in a remote rural setting." Canadian Family Physician **44**: 1869-1877.

Health Canada (2004). The Social Determinants of Health: An Overview of the Implications for Policy and the Role of the Health Sector. PHAC.

Health Canada (2005). The statistical profile on the health of First Nations in Canada for the year of 2000.

Health Council of Canada, H. (2007). Aboriginal Health. Current Initiatives.

Heaman, M. C., Karen (2005). "Prevalence and Correlates of Smoking During Pregnancy: A Comparison of Aboriginal and Non-Aboriginal Women in Manitoba." Birth **32**(4): 299-305.

Hubert, H. B., M. Feinleib, et al. (1983). "Obesity as an independent risk factor for cardiovascular disease: a 26-year follow-up of participants in the Framingham Heart Study." Circulation **67**(5): 968.

Humphrey, M. H., D. (2000). "A prospective study of gestation and birthweight in Aboriginal pregnancies in far north Queensland." Aust N Z J Obstet Gynaecol **40**(3): 326-30.

Hutchinson D, L. S., R Mootsa, J T Leard, M P Lynchc (2001). "Heavy cigarette smoking is strongly associated with rheumatoid arthritis (RA), particularly in patients without a family history of RA." Ann Rheum Dis **60**: 223-227.

INAC (1996). Report of the Royal Commission on Aboriginal Peoples.

INAC, I. a. N. A. C. (2004). Measuring First Nations well-being. INAC.

Iwasaki, Y., J. Bartlett, et al. (2004). "An examination of stress among Aboriginal women and men with diabetes in Manitoba, Canada." Ethn Health **9**(2): 189-212.

Iwasaki, Y., J. Bartlett, et al. (2005). "Coping with stress among Aboriginal women and men with diabetes in Winnipeg, Canada." Soc Sci Med **60**(5): 977-88.

Jacobs, P. (1998). Cost of Diabetes in the Status Indian Population of Manitoba. H. C. a. M. H. Medical Services Branch.

Jenkins, A. L., T. W. Gyorkos, et al. (2003). "An overview of factors influencing the health of Canadian Inuit infants." Int J Circumpolar Health **62**(1): 17-39.

Jenkins, A. L., T. W. Gyorkos, et al. (2004). "Risk factors for hospitalization and infection in Canadian Inuit infants over the first year of life--a pilot study." Int J Circumpolar Health **63**(1): 61-70.

Jin, A. and J. D. Martin (2003). "Hepatitis A among residents of First Nations Reserves in British Columbia, 1991-1996." Can J Public Health **94**(3): 176-9.

Jin A, M. J. (2003). "Hepatitis A Among Residents of First Nations Reserves in British Columbia, 1991-1996." Canadian Journal of Public Health **94**(3): 176-179.

Judd, N. L., W. C. Griffith, et al. (2004). "Consideration of cultural and lifestyle factors in defining susceptible populations for environmental disease." Toxicology **198**(1-3): 121-33.

Judd, N. L., W. C. Griffith, et al. (2003). "Assessment of PCB congener analytical methods: do they meet risk assessment needs?" Arch Environ Contam Toxicol **44**(1): 132-9.

Kallen, K. (2001). "The impact of maternal smoking during pregnancy on delivery outcome." Eur J Public Health. **11**(3): 329-33.

Karmali S. Laupland K, H. A., Findlay C, Kirpatrick AW, Winston B, Kotbeek J, Crowshoe L, Hameed M. (2005). "Epidemiology of severe trauma among status Aboriginal Canadians: a population-based study." Canadian Medical Association Journal **172**(8): 1007-1011.

Key, T. A., NE; Spencer, EA; Travis, RC (2002). "The Effect of diet on risk of cancer." The Lancet **360**(Sept): 861-861.

Key, T. A., NE; Spencer, EA; Travis, RC (2002). "The Effect of Diet on Risk of Cancer." The Lancet **360 (september)**: 861.

Kirmayer, L. J., G. M. Brass, et al. (2000). "The Mental Health of Aboriginal Peoples: Transformations of Identity and Community." Canadian Journal of Psychiatry **45**(7): 607.

Kue Young, O. N., JD; Elias, B; Leader, A; Reading, J; McDonald, G (1998). Chronic diseases. Literature review and analysis of the first nations and inuit regional health survey national core data. C. f. A. Health.

Kuh, D., Y. Ben-Shlomo, et al. (2004). A Life Course approach to Chronic Disease Epidemiology. New York, Oxford University Press.

Kuhnlein, H. V., O. Receveur, et al. (2001). "Traditional food systems research with Canadian Indigenous Peoples." Int J Circumpolar Health **60**(2): 112-22.

Kuhnlein, H. V., O. Receveur, et al. (2004). "Arctic Indigenous peoples experience the nutrition transition with changing dietary patterns and obesity." J Nutr **134**(6): 1447-53.

Kumanyika, S. (1993). "Ethnicity and obesity development in children." Annals of the New York Academy of Sciences **699**: 81.

Langner, N. R. and J. M. Steckle (1991). "National database on breastfeeding among Indian and Inuit women: Canada 1988." Arctic Med Res **Suppl**: 563-5.

Lawn, J., N. Langner, et al. (1998). "Food consumption patterns of Inuit women." Int J Circumpolar Health **57 Suppl 1**: 198-204.

Lawrence, R. and D. Martin (2001). "Moulds, moisture and microbial contamination of First Nations housing in British Columbia, Canada." Int J Circumpolar Health **60**(2): 150-6.

Macaulay, A. C., N. Hanusaik, et al. (1991). "Breastfeeding in the Mohawk community of Kahnawake: revisited and redefined." Arctic Med Res **Suppl**: 581-5.

MacMillan, H. L., A. B. MacMillan, et al. (1996). "Aboriginal health." Cmaj **155**(11): 1569-78.

Mann, S. L., M. E. Wadsworth, et al. (1992). "Accumulation of factors influencing respiratory illness in members of a national birth cohort and their offspring." J Epidemiol Community Health **46**(3): 286-92.

Marmot, M. (2005). "Social determinants of health inequalities." Lancet **365**: 1099-104.

Marmot, M. G. K., M; Elston, MA (1987). "Social / economic status and disease." Annual Reviews Public Health **8**: 111-35.

Marmot, M. G. S., N. (1998). Mastering the control factor. Part two. The health report, Radio National. **2007**.

Marrett, L. C., M (2003). "Cancer incidence and mortality in Ontario First Nations, 1968-1991 (Canada)." Cancer Causes & Control: CCC [Cancer Causes Control] **14**: 259-268.

Maunder R, H. J., Vincent L, Bennett J, Peladeau N, Leszcz M, Sadavoy J, Verhaeghe LM, Steinberg R, Mazzulli T (2003). "The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital." Canadian Medical Association Journal **168**(10): 1245-1251.

Mc Ewan, B. S., N. (1998). Good stress and bad stress. Mastering the control factor. part three. The health report, ABS Radio National. **2007**.

McBride SR, M. W. (2001). Over-representation of Aboriginal students reported with behavioural disorders. A report to the Ministry of Education - British Columbia, Aboriginal Education Branch. Victoria, B.C.

McCormick, R. (1995/6). "Culturally-appropriate means and ends of counseling as described by the First Nations people of British Columbia." International Journal for the Advancement of Counselling **18**(3): 163-172.

McEwen, B. (2006). "Protective and damaging effects of stress mediators: central role of the brain." Dialogues Clin Neurosci **8**(4): 367-81.

McHardy M, O. S. E. (2004). First Nations Community Well-Being in Canada: The Community Well-Being Index (CWB), 2001, Strategic Research and Analysis Directorate Indian and Northern Affairs Canada.

McIntyre, L., S. K. Connor, et al. (2000). "Child hunger in Canada: results of the 1994 National Longitudinal Survey of Children and Youth." Cmaj **163**(8): 961-5.

McIntyre L, S. C. (1986). "Prevalance of hypertension, obesity, and smoking in three Indian communities in northwestern Ontario." Canadian Medical Association Journal **134**(4): 345.

Mignone, J. (2003). Measuring Social Capital: A Guide for First Nations Communities, Canadian Institute for Health Information.

Mignone, J. and J. O'Neil (2005). "Social capital and youth suicide risk factors in First Nations communities." Can J Public Health **96 Suppl 1**: S51-4.

Millar, W. J. (1992). "Place of birth and ethnic status: factors associated with smoking prevalence among Canadians." Health Report **4**(1): 7-24.

Millar, W. J. (1992). "Place of birth and ethnic status: factors associated with smoking prevalence among Canadians." Health Rep **4**(1): 7-24.

Moffatt, M. E. (1995). "Current status of nutritional deficiencies in Canadian aboriginal people." Can J Physiol Pharmacol **73**(6): 754-8.

Mohsin, M. B., AE; Jalaludin, B. (2005). "The Influence of antenatal and maternal factors on stillbirths and neonatal deaths in New South Wales, Australia." Journal of Biosoc. Sci.

Mokdad, A. H. F., Earl S.; Bowman, Barbara A.; William H. Dietz, MD, PhD; Frank Vinicor, MD, MPH; Virginia S. Bales, MPH; James S. Marks, MD, MPH (2003). "Prevalence of Obesity, Diabetes, and Obesity-Related Health Risk Factors, 2001." JAMA **289** (1): 76-79.

Moore, L. E., R. T. Wilson, et al. (2005). "Lifestyle factors, exposures, genetic susceptibility, and renal cell cancer risk: a review." Cancer Invest **23**(3): 240-55.

Morgan, Brian. "A Tangata Whenua Perspective on Sustainability using the Mauri Model: *Towards decision making balance with regard to our social, economic, environmental and cultural well-being."* *http://www.nzsses.org.nz/Conference/Session5/36%20Morgan.pdf*. New Zealand Society for Sustainability Engineering and Science, 2004. Accessed on June 20, 2005.

Morris, K., M. Morgenlander, et al. (1990). "Wood-burning stoves and lower respiratory tract infection in American Indian children." Am J Dis Child **144**(1): 105-8.

Mumford, J. L., X. Lee, et al. (1993). "DNA adducts as biomarkers for assessing exposure to polycyclic aromatic hydrocarbons in tissues from Xuan Wei women with high exposure to coal combustion emissions and high lung cancer mortality." Environ Health Perspect **99**: 83-7.

Murphy, N. J., C. D. Schraer, et al. (1995). "Dietary change and obesity associated with glucose intolerance in Alaska Natives." J Am Diet Assoc **95**(6): 676-82.

Newbold, K. (1998). "Problems in search of solutions: health and Canadian aboriginals." Journal Of Community Health [J Community Health] **23**(1): 59-73.

Newbold, K. B. (1997). "Aboriginal physician use in Canada: location, orientation and identity." Health Econ **6**(2): 197-207.

Nutrition Canada. and Nutrition Canada. (1975). The Indian survey report: a report from Nutrition Canada. Ottawa, Information Canada.

Petersen, K. M., R. J. Singleton, et al. (2003). "A qualitative study of the importance and etiology of chronic respiratory disease in Alaska native children." Alaska Med **45**(1): 14-20.
PHAC (2006). Programs.
PHAC, P. H. A. o. C. (2006). Programs.
Planning, B. M. o. H. (2001). "The Health and Well-being of Aboriginal People in British Columbia."
Reading, J. (2003). "The Canadian Institutes of Health Research, Institute for Aboriginal Peoples' Health: a global model and national network for Aboriginal health research excellence." American Journal of Public Health **94**(3): 185-189.
Reading, J. (2003). "Unravelling the mystery of Type 2 Diabetes in the Oji-Cree." Canadian Journal of Diabetes **27**(3): 227-228.
Reading J, N. E. (2002). "Improving the health of future generations: the Canadian Institutes of Health Research Institute of Aboriginal Peoples' Health." American Journal of Public Health **92**(9): 1396-1400.
Rhem (2006).
RHS (1996-1997). First Nations Regional Longitudinal Health Survey.
RHS (2002/2003). "First Nations Regional Longitudinal Health Survey."
RHS, F. N. R. L. H. S., 1996-97. (1996-97.). RHS, First Nations Regional Longitudinal Health Survey. RHS 1996-97, First Nations and Inuit Regional Health Survey National Steering Committee.
RHS, F. N. R. L. H. S., 2002/2003 (2002/2003). RHS, First Nations Regional Longitudinal Health Survey. RHS 2002/2003, First Nations Information Governance Committee.
Ritchie, A. J. and J. L. Reading (2004). "Tobacco smoking status among Aboriginal youth." Int J Circumpolar Health **63 Suppl 2**: 405-9.
Ritchie AJ, R. J. (2004). "Tobacco smoking status among Aboriginal youth." International Journal of Circumpolar Health **63**(Supplement 2): 405-409.
Rodrigues, S., E. J. Robinson, et al. (2000). "High rates of infant macrosomia: a comparison of a Canadian native and a non-native population." J Nutr **130**(4): 806-12.
Santini, D. L., B. Rigas, et al. (1999). "Role of diet and NSAIDs in the chemoprevention of colorectal cancer." J Assoc Acad Minor Phys **10**(3): 68-76.
Serdula, M. K., D. Ivery, et al. (1993). "Do obese children become obese adults? A review of the literature." Preventive medicine **22**(2): 167.
Seto, C. a. A. (2006). "Protecting Our Gifts and Securing Our Future
First Nations Obesity: A Growing Epidemic." Prepared for: The Assembly of First Nations.
Shah, N. B., MB. (2000). "A systematic review and meta-analysis of prospective studies on the association between maternal cigarette smoking and preterm delivery." Am J Obstet Gynecol. **182**(2): 465-72.
Silman, A., Newman J, MacGregor AJ. (1996). "Cigarette smoking increases the risk of rheumatoid arthritis. Results from a nationwide study of disease-discordant twins." Arthritis Rheum. 39(5): 732-5. (1996). "Cigarette smoking increases the risk of rheumatoid arthritis. Results from a nationwide study of disease-discordant twins." Arthritis Rheumatoid **39**(5): 732-735.
Sin, D. D., S. Spier, et al. (2004). "The relationship between birth weight and childhood asthma: a population-based cohort study." Arch Pediatr Adolesc Med **158**(1): 60-4.

Sin, D. D., H. Wells, et al. (2002). "Asthma and COPD among aboriginals in Alberta, Canada." Chest **121**(6): 1841-6.

Slattery, M. L. (2005). "What is the role of diet in the development of cancer in American Indian and Alaska native populations?" J Cancer Educ **20**(1 Suppl): 92-6.

Smith, G. D., C. Hart, et al. (1997). "Lifetime socioeconomic position and mortality: prospective observational study." BMJ (Clinical research ed.) **314**(7080): 547.

Smye, V. and A. J. Browne (2002). "'Cultural safety' and the analysis of health policy affecting aboriginal people." Nurse Res **9**(3): 42-56.

Square, D. (1997). "Fetal alcohol syndrome epidemic on Manitoba reserve." Canadian Medical Association Journal **157**(1): 59-60.

Square, D. (1997). "Fetal alcohol syndrome epidemic on Manitoba reserve." Canadian Medical Association Journal. **157**(1): 59-60.

Stephens C, N. C., Porter J, Willis R, Clark S (2005). "Indigenous peoples' health - why are they behind everyone, everywhere?" The Lancet **366**(9479): 10-13.

Stocks, J. and C. Dezateux (2003). "The effect of parental smoking on lung function and development during infancy." Respirology **8**(3): 266-85.

Strachan, D. P. (2000). "The role of environmental factors in asthma." Br Med Bull **56**(4): 865-82.

Syme, L. S., N. (1998). Mastering the control factor. Part one. The Health Report., Radio National. **2007**.

Syme, S. (1989). Control and health: a personal perspective., Wiley&Sons.

Syme, S. (2004). "Social determinants of health: the community as an empowered partner." Preventing chronic disease: public health research, practice and policy **1**(1).

Szathmary, E. J. (1983). "Dogrib Indians of the Northwest Territories, Canada: genetic diversity and genetic relationship among subarctic Indians." Ann Hum Biol **10**(2): 147-62.

Szathmary, E. J. and N. Holt (1983). "Hyperglycemia in Dogrib Indians of the Northwest Territories, Canada: association with age and a centripetal distribution of body fat." Hum Biol **55**(2): 493-515.

Thomson, M. (1990). "Heavy birthweight in Native Indians of British Columbia." Can J Public Health **81**(6): 443-6.

UNDP (1990). Human Development Report 1990. New York, Oxford University Press.

Valery, P. C., M; Stirling, J; Green, AC (2006). "Cancer diagnosis, treatment, and survival in Indigenous and non-Indigenous Australians: a matched cohort study." Lancet [Lancet] **367**(9525): 1842-48.

van Rossum, C. S., MJ; van de Mheen, H; Grobbee, DE; MArmot, MG. (2000). "Employment grade differences in cause specific mortality. A 25 year follow up of civil servants from the first Whitehall study." J Epidemiolo Community Health **54**: 178-184.

Watch, G. H. (2005). An Alternative Health Report.

WHO (2003). Social determinants of health: the solid facts.

WHO (2007). Commission on Social Determinants of Health. **2007**.

Wiseman, C. L. and F. A. Gobas (2002). "Balancing risks in the management of contaminated first nations fisheries." Int J Environ Health Res **12**(4): 331-42.

Young, T. K. (1988). Health Care and Cultural Change, University of Toronto Press.

Young, T. K. (1994). The health of Native Americans: toward a biocultural epidemiology. New York, Oxford University Press.

Young, T. K. (1994). The Health of Native Americans: Toward a Biocultural Epidemiology, Oxford University Press.

Young, T. K. (2003). "Review of research on aboriginal populations in Canada: relevance to their health needs." Bmj **327**(7412): 419-22.

Young, T. K., H. J. Dean, et al. (2000). "Childhood obesity in a population at high risk for type 2 diabetes." The Journal of pediatrics **136**(3): 365.

Young, T. K. and S. B. Harris (1994). "Risk of clinical diabetes in a northern Native Canadian cohort." Arctic Med Res **53**(2): 64-70.

Young, T. K., J. Reading, et al. (2000). "Type 2 diabetes mellitus in Canada's first nations: status of an epidemic in progress." Cmaj **163**(5): 561-6.

Ziegler, D. (2005). "Type 2 diabetes as an inflammatory cardiovascular disorder." Current Molecular Medicine **5**(3): 309.

Appendix A: Background on International and Ethics Activities Supported by Canada's IAPH

International Health Research Agency Agreements

A recent Cooperation Agreement between Canadian Institutes of Health Research (CIHR), the National Health and Medical Research Council of Australia (NHMRC) and the Health Research Council of New Zealand (HRC) acknowledged Indigenous interests in developing and implementing an advanced health research agenda affecting their peoples. This trilateral collaboration supports research in the area of First Nations peoples' health, with the goal of improving the health of First Nations communities in these three countries. The agencies agree to promote multi-disciplinary, multi-institutional and multi-sectoral collaborations and to build upon existing networks of researchers to further develop research of First Nations peoples' health in mutually shared priority areas (http://www.cihr-irsc.gc.ca/e/27083.html).

"The national health research agencies of Canada, Australia and New Zealand recognise the disparity between the health of their Indigenous peoples and the health of their general populations. They also recognise the desire of Indigenous people for research to be undertaken on terms acceptable to them, in particular the protection of cultural knowledge and values, the participation of Indigenous people in research and research decision-making, and the promotion of Indigenous research by Indigenous researchers."

Another groundbreaking agreement was created between Canadian Institutes of Health Research (CIHR) and the National Institutes of Health (NIH) to foster collaboration on health research issues of priority to American Indian, Alaska Native and Canadian First Nations, Métis and Inuit peoples. Coinciding with the inaugural opening of the Museum of the American Indian in Washington, DC, the President of CIHR and the President of NIH signed an historic Letter of Intent in Bethesda, Maryland on September 20, 2004.

Health research priorities that will form the initial basis for collaboration and further consultation were developed at the United States and Canada Health Research Priorities Roundtable,

September 19-20, 2004, Rockville, Maryland. The NIH National Center on Minority and Health Disparities and CIHR-IAPH will serve as the primary operational bodies in implementing the initial research plan resulting from this agreement.

Ethics Guidelines for Health Research Involving First Nations Peoples

Whereas First Nations people, generally, acknowledge the importance of research conducted within their communities, many do not feel adequately protected.

In Canada, the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans, 1998, (TCPS) establishes standards and procedures for the governance of ethical research involving human subjects, funded by the Federal Tri-Council: CIHR, the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council of Canada (SSHRC).

Tri-Council Agencies do not fund research unless it complies with the TCPS. Because of the slow progress in developing Section 6, CIHR initiated a project to draft Aboriginal-specific health research guidelines so as to ensure adequate ethics protections for First Nations research participants in the context of health research funded by CIHR. Ultimately, these Guidelines will inform revisions of TCPS Section 6, which will address all types of research.

The intent of the new Guidelines is to promote health through research that is in keeping with First Nations values and traditions. The Guidelines address such issues as community and individual consent, protection of cultural knowledge, benefit sharing, secondary use of data and biological samples, and research methodology.

The Guidelines will assist in developing research partnerships that will facilitate and encourage mutually beneficial, culturally competent, research. Thus, the Guidelines will have the effect of enabling more and better research that meets the health care needs of First Nations people.

Between the spring of 2004 and fall of 2005, an Aboriginal Ethics Working Group (AEWG) produced the first draft of the Guidelines. The draft Guidelines were then disseminated throughout research and aboriginal communities across the country for comment. CIHR hosted workshops across the country to solicit feedback. This provided valuable input to the AEWG, which undertook revisions. A second consultation was then launched, to provide the broader stakeholder community with the opportunity to comment.

Health Canada and Justice Canada contributed significantly during the second phase of consultation, and the Guidelines have benefited significantly from that input. These Departments, as well as the Public Health Agency of Canada (PHAC) endorse the Guidelines in their final form. As of its March 21, 2007 meeting, CIHR's Governing Council approved the Guidelines.

As with all CIHR Guidelines, these constitute a living document. The Guidelines will be evaluated at least every four years – more often if necessary. The Guidelines are designed to be a collaborative tool for researchers, First Nations communities and First Nations individuals. CIHR expects that the Guidelines will be welcomed and widely accepted. It is expected that this will give rise to more, better and less conflict when undertaking First Nations health research. The Guidelines are not regulations nor are they meant to be of general application. Rather, they are guidelines applicable only to research to which CIHR has made a financial contribution.

Appendix B: Overview of First Nations' Social Determinants of Health, and Recommended Interventions

Early Life

The long-term health and well-being of an individual is contingent on their lifelong development, which begins in the early years. As the World Health Organization (2003) notes, "the foundations of adult health are laid in early childhood and before birth." This is because "[p]oor early experience and slow growth become embedded in biology during the processes of development, and form the basis of the individual's biological and human capital, which affects health throughout life" (WHO 2003). From an Indigenous perspective, "the medicine wheel life cycle connects the experiences and wellness of infants to the experiences and wellness of children, youth, young adults, parents, grandparents, and elders, again from an individual, family, community, and First Nations perspective" (RHS 2002/2003).

In an effort to highlight the importance of early life experiences, the current research on prenatal and maternal health, infant health, and child health are reviewed below through a number of different themes. A discussion of opportunities for more research and the policy implications of early life's social determinants of health is also included.

Prenatal Health and Development

Individual well-being is a product of one's development, which begins in pregnancy. The particular effects of maternal health and healthy pregnancy on child and adult development are, therefore, important to understand. Research in this area suggests that unhealthy pregnancy can adversely affect fetal development: nutritional deficiencies, maternal stress, maternal smoking and/or substance abuse, inactivity, and inadequate prenatal health care are among the most common factors noted as negatively impacting early childhood development (WHO 2007)."Teen pregnancy –especially before age 18 – is [also] a health and social concern… because mothers in their early teens face higher risks during pregnancy, and early childbearing often begins a cycle of poverty and dependence. Babies born to teen mothers are more likely to die in the first year of

life" (British Columbia 2001). Thus, ensuring effective sexual health and education within First Nations communities is important for the future.

Maternal Smoking

Preventing and reducing smoking is one of the most relevant and complex public health concerns of this generation (Anto, Vermeire et al. 2001). It is particularly important in terms of respiratory disease because exposure to smoke is known to cause damage and put strain on the lungs and respiratory system (Stocks and Dezateux 2003). Smoking during pregnancy not only influences one's own health, but also puts the fetus at risk and influences their health, a disease risk throughout childhood and adulthood (Gilchrist, Woods et al. 2004). For example, negative effects of maternal and household smoking on the fetal growth has been well-documented: numerous studies have shown that smoking tobacco during pregnancy causes fetal growth retardation (FGR)(Humphrey 2000; Mohsin 2005), which may result in low birth weight babies, who are then placed at a greater risk of illness and death (Shah 2000; Chan 2001; Mohsin 2005; Kallen 2001). FGR can also sometimes result in preterm births[3], stillbirths and neonatal deaths (Hanrahan, Tager et al. 1992; Gilliland, Berhane et al. 2000; Heaman 2005). In addition, infants born to women who smoke are at the higher risk of respiratory infections and asthma compared with infants of non-smoking mothers (RHS 2002/2003).

According to First Nations Regional Health Survey 2002-2003 Report, "rates of maternal smoking in pregnancy among First Nations are much higher than those of other Canadians" (RHS 2002/2003). For example, a Canadian study found that, among 684 interviewed women, a significantly higher proportion of First Nations women (61.2%) than non-First Nations women (26.2%) smoked during pregnancy; however, the smaller proportion of First Nations women than non-First Nations reported smoking more than 1 pack per day (Heaman 2005). In both First Nations and non-First Nations populations, the mean number of cigarettes smoked by pregnant women in both populations decreased as pregnancy progressed; after controlling for race/ethnicity, significant correlates of smoking during pregnancy for both non-First Nations and First Nations women included low-income, alcohol use during pregnancy (discussed below), low

[3] Preterm birth is birth at < 37 weeks' gestation.

support from others, and inadequate prenatal care; having a paid job reduced the odds of smoking during pregnancy (Canada 2005). "The clear strong link between maternal smoking and long-term adverse health outcomes for children strongly suggests the urgent need for strategies to reduce maternal smoking among First Nations" (RHS 2002/2003). In addition to maternal smoking, household smoking during pregnancy is also a concern. As the rate of household smoking in First Nations communities is also high – passive smoke exposure during pregnancy occurred in 50% of First Nations homes – smoking during pregnancy is an area that must be targeted in the future.

The challenge for reducing smoking within First Nations populations, however, is that tobacco is spirituality embedded in many First Nations practices and is important to many cultural traditions (Cardinal 2004) [4]. Although not all First Nations people smoke for spiritual reasons, culturally appropriate strategies to reduce tobacco smoking and uterine exposure to tobacco smoke are still required. Although all generations and genders need to be educated about the risks for children's healthy development, the connection between smoking and chronic diseases (Hanrahan, Tager et al. 1992; Millar 1992; Cliver 1995; Gilliland, Berhane et al. 2000; Sin, Wells et al. 2002) indicates that targeted antenatal smoking cessation programs are needed for First Nations mothers.

Antenatal Influence of Alcohol and Drugs

The toxic effects of alcohol on the fetus may result in fetal alcohol effects (FAE) or fetal alcohol syndrome (FAS), depending on the amount of alcohol consumed during pregnancy. Regular consumption of two drinks a day or more is toxic to the fetus and leads to FAE/FAS (Dictionary 2002). FAS is characterized by low birth weight, growth retardation, head and facial abnormalities and mental retardation (Canadian Pediatric Society 2002). The exact prevalence of FAS is unknown (Canadian Pediatric Society 2002).

The study of alcohol use by pregnant women on Vancouver Island has found that 54% (Square 1997) of First Nations and 16% (Canadian Pediatric Society 2002) of non-First Nations pregnant women were found to be at risk of having a newborn with some fetal alcohol effects. It

[4] Tobacco smoke is often used as part of in unison with prayers and offerings.

has been estimated that overall FAS incidence in the general Canadian population is between 2.8 and 4.8 per 1000 of live birth (Canadian Pediatric Society 2002). In northern Manitoba, based on physical findings, the rate of FAS in the First Nations population was 7.2 per 1000 of live births (Square 1997; Canadian Pediatric Society 2002). However, many studies have shown that often FAS and FAE remain undiagnosed until the affected child goes to school; therefore, true incidence of FAS is much higher than the reported rates of FAS/FEA in newborns (Square 1997). The findings of one Manitoba's reserve study revealed about 100 cases of FAS/FAE per 1000 birth (Canada 2001).

Specific studies on the use (and abuse) of drugs and alcohol in First Nations communities are necessary to understand the implications of these broader trends in First Nations communities in Canada and the most effective and culturally appropriate ways to ensure the health and safety of First Nations children.

Other Maternal Influences

In addition to "[s]moking by the mother during pregnancy, lack of nourishment in the mother's womb, pregnancy induced hypertension, and multiple births [are known to cause] low birth weight" (British Columbia 2001). While it is often agreed that low birth weight increases a child's risk of infant illness and death (RHS 2002/2003), there is disagreement as to what impact high or low birth weight can have on problems later in life. For example, studies in the mainstream population often suggest that low birth weight increases a child's chances of health complications. One problem with these studies, however, is that they often assume that a higher birth weight is healthier: this assumption does not account for maternal conditions, such as obesity and diabetes, that might cause changes in the uterine environment that will produce heavier, but not necessarily healthier, babies (Chan, Wong et al. 1990; Coory 2000; Sin, Wells et al. 2002).

The situation is complicated further by Aboriginal birth weights statistics, which are contradictory. On the one hand, poor fetal development and low birth weight has been documented in many disadvantaged and/or marginalized Indigenous communities (Blair 1996; Chan, Keane et al. 2001), where access to basic necessities and medical care puts mothers and

their infants at risk. A prevalence of poor living conditions, socioeconomic problems, and inadequate maternal health care in many of Canada's Aboriginal communities places these infants at a high risk for low birth weight (Blair 1996; Chan, Keane et al. 2001). On the other, the Cree of James Bay have the highest reported mean birth weight and a high prevalence of infant macrosomia (Rodrigues, Robinson et al. 2000). "A genetic predisposition to heavier babies, higher rates of glucose intolerance during pregnancy, and nutritional differences are some of the explanations that have been proposed" (British Columbia 2001; Sin, Spier et al. 2004). Before conclusions can be drawn about this risk factor, more research and understanding is needed (Kuh, Ben-Shlomo et al. 2004). However, it can be said that abnormal birth weights, which appear to be common with First Nations populations, can have a variable impact on adult health and development.

Breastfeeding

The first years following birth have also been noted as having important impacts on healthy development: "Infant experience is important to later health because of the continued malleability of biological systems" (WHO 2003). The impact of breastfeeding on infant health is an area that has received some attention in the literature, which is reviewed below. However, further research in this area is recommended specific to First Nations.

Health Canada encourages mothers to breastfeed because it provides infants with nutritional and emotional nurturing, as well as immunological benefits that enhance an infant's growth and development (Canada November 1998). Breastfeeding is important in terms of disease prevention, because infants who are breastfed have an increased protection against respiratory, ear, and intestinal infections: the unique components of human milk helps protect infants from outside infection (Canada 2002; Canada November 1998). In addition to the health benefits, breastfeeding is socially and economically advantageous, since it is an ecologically sound, efficient, and a self-reliant food source (Canada 2002). However, women with lower socioeconomic status tend to have lower breastfeeding rates (Banks August/September 2003); First Nations' lower socioeconomic status raises concern in this area.

Like all babies born prior to the advent of formula, First Nations infants were nursed until they were able to digest other food sources (MacMillan, MacMillan et al. 1996). Traditional breastfeeding practices, however, shifted to bottle-feeding in the 1950s when formula was introduced to the population (Langner and Steckle 1991; Macaulay, Hanusaik et al. 1991; RHS 2002/2003). As a result, First Nations communities have been noted as having lower breastfeeding rates than women in the general population (Langner and Steckle 1991). There is contradictory evidence with regards to the increase or decrease in initiation of breastfeeding in First Nations communities, which appears to vary largely on a community basis (Dodgson, Duckett et al. 2002; RHS 2002/2003). However, there is also "some evidence to suggest that First Nations mothers who do breastfeed do so for a longer period of time" (RHS 2002/2003). A 1988 survey conducted for the National Database on Breastfeeding among Indian and Inuit Women revealed that 60.7% of infants were breastfed at birth, but the rate dropped dramatically to 31.1% by the time the infants were 6 months old. (Jenkins, Gyorkos et al. 2004). However, according to the 2002-03 Regional Health Survey, 62.5% was the average proportion of children breastfed.

The socio-cultural, political, and economic forces connected to breastfeeding are complex (Banks August/September 2003). Unlike most Canadian women, the success or failure of breastfeeding among Mohawk women (and perhaps other First Nations) is strongly influenced by the baby's grandmother, who plays a key role in the child's rearing: breastfeeding often appears impractical for mothers, as most grandmothers and extended family members also want to participate in feeding the infant – bottle feeding makes this possible (Banks August/September 2003). Other cultural influences, such as government-subsidized baby formula, which encourage low breastfeeding rates, need to be further investigated (Langner and Steckle 1991; Macaulay, Hanusaik et al. 1991; Dodgson, Duckett et al. 2002; Gilchrist, Woods et al. 2004; Banks August/September 2003).

Apart from figures that suggest that First Nations breastfeeding rates are 'modestly lower' than those of other Canadians (RHS 2002/2003), feeding practices in First Nations communities have not been well reported (Thomson 1990; Canada 2002; Halken 2004; Canada November 1998).

The protective benefits of breastfeeding for chronic diseases and risk factor development, such as obesity (RHS 2002/2003), highlight the need to better understand breastfeeding rates.

In the future, interventions must aim to empower, educate, and encourage women (and the larger community) to breastfeed infants (Banks 2003). In 1995, the Mohawks of Kanesatake embarked on a breastfeeding promotion project – the Ka'nistenhsera Teiakotihsnie's program (Banks August/September 2003). The success of this community based and culturally sensitive initiative is a good model for future programs, since "[breastfeeding] initiation rates have increased by 43% and exclusive breastfeeding to four months of age has risen 23%" in the Kanesatake community (Banks August/September 2003). By accounting for cultural measures, research can build on projects like this to develop and promote intervention programs that are needed to ensure infant health (Dodgson, Duckett et al. 2002). In order to move forward in this area, however, better statistics on First Nations breastfeeding practices are needed.

Child health

There are many determinants influencing health which make up the social, economic, and physical landscape where children live, learn, and play" (Seto 2006). In examining these multiple impacts, the health and well-being of First Nations children must be placed within their unique social, political and historical context. As Greenwood explains, "First Nations children are born into a colonial legacy" that continues to impact their health through social conditions, such as the loss of culture, changes to diet and nutritional patterns, and living conditions (Greenwood 2005). Key social determinants of health impacting First Nations children are explained below so as to highlight why "child health initiatives must recognize the wider array of circumstances that may be affected by a child social and economic background" (Campbell 2002).

Cultural Continuity

According to Chandler and Lalonde (Chandler and Lalonde 1998), cultural continuity helps build resiliency within First Nations communities and positively impact health and well being. In addition to the work of Chandler and Lalonde (Chandler and Lalonde 1998). Greenwood (2005) suggests that "current evidence is mounting with regard to the link between cultural continuity, cultural resiliency, and increased overall health and well-being"(Greenwood 2005). Ensuring

that the rights of First Nations peoples are upheld and respected will influence the potential for First Nations children now and in the future.

The "failure [of health policies and programs] to account for the family and community relationships that play a fundamental role in shaping children's health" must be recognized. Furthermore, it is thought that "children's social relations can affect and ultimately improve their access to health care" (Campbell 2002). "Parents, grandparents, teachers, and community members all play a key role in educating children about pediatric illness and its prevention, and in supporting children who must make significant lifestyle changes in order to preserve their good health" (Campbell 2002).

Smoking

As discussed earlier with relevancy to maternal health, it is well-documented that smoking exacerbates early life risks for respiratory diseases by damaging the respiratory system and encouraging or progressing the development of chronic respiratory problems (Cunningham, Dockery et al. 1995). Throughout childhood and later in life, exposure to smoke can continue to reduce lung function and increase the risk of respiratory problems (British Columbia 2001). Unfortunately, habitual smoking and passive smoking are significant problems in many First Nations communities.

According to the Tobacco Use in British Columbia 1997 survey, 32% of First Nations children were daily or nearly daily exposed to cigarette smoking in their homes (British Columbia 2001). This compares to 18% of all BC households with children exposed to smoking (RHS 2002/2003; Ritchie and Reading 2004). The frequency of asthma among First Nations children is at 14.6%, compared to the general population with a rate of 8.8%. Chronic bronchitis is more common among First Nations children at 3.6% of those surveyed being treated for this condition (RHS 2002/2003).

The average age of smoking initiation among First Nations children was found to be 12.2 years old, where the youngest age was 4 years old (RHS 2002/2003; Ritchie and Reading 2004). By

the age of 6, about 2% of First Nations children had initiated smoking, which doubled by the age of 8, and then doubled again by the age of 12, peaking at the age of 13 (Ellickson 2001).

Smoking is thought to have a multiplicity of impacts, although First Nations specific data is unavailable. Examining this information according to First Nations specific measures will be integral for understanding the risks placed on First Nations children and the types and numbers of interventions needed to impact positive change.

Nutrition

A child's growth and development is largely impacted by their ability to properly fuel their body and meet, but not exceed, their daily caloric levels and nutritional requirements.

Studies of diet among First Nations peoples continue to develop as more rural and remote communities come into greater contact with Western cultures. New diet patterns related to this process of acculturation place First Nations communities at risk of malnutrition: traditional food now provides less than 30% of total dietary energy, despite this food's proportionally greater contribution of essential nutrients (Nutrition Canada. and Nutrition Canada. 1975; Lawn, Langner et al. 1998; Kuhnlein, Receveur et al. 2001). In addition, it has been suggested that First Nations people have low intakes of many nutrients and that children are the most adversely affected by poor nutritional status (Moffatt 1995).

Nutritional deprivation as a result of hunger is also a risk that requires attention. The relevancy of this to First Nations populations is evidenced by the fact that single-parent families, families relying on social assistance and off-reserve First Nations families were overrepresented among those experiencing hunger. Since hunger coexisted with the mother's poor health and activity limitation and poor child health (McIntyre, Connor et al. 2000)), further research into the links among these risk factors is also required.

Obesity

Linked to the concern for the nutritional health of First Nations communities, is the concern with the growing 'obesity epidemic' in Canada. Longitudinal studies among non-First Nations have

shown that being overweight or obese during childhood and adolescence predicts adult obesity (Serdula, Ivery et al. 1993; Guo, Roche et al. 1994), which is associated with Type 2 diabetes (Barrett-Connor 1989) and coronary heart disease (Hubert, Feinleib et al. 1983). While high rates of pediatric obesity have been reported in studies of several racial groups (Kumanyika 1993), Aboriginal children are at a particularly high risk (Bernard, Lavallee et al. 1995). Thus, understanding the etiology of pediatric obesity throughout the life course in First Nations Canadians could have substantial public health implications for children and adults of this group.

As previously alluded to, obesity during childhood has been shown to increase the risk of childhood diabetes. In a study of First Nations children aged 4 to 19, alarming obesity prevalence rates were documented: 64% of female children and 60% of male children were reported as being obese. In this study, obese children were shown to have an increased risk for diabetes (Young, Dean et al. 2000).

According to the First Nations Regional Longitudinal Health Survey, 55.2% of First Nations children are either overweight (22.3%) or obese (36.2%). The obesity prevalence for First Nations boys aged 8-11 years is seven times higher and girls eight times higher than the general population (RHS, 2005). Over one half (55.4%) of First Nations children are eating a nutritious balanced diet (RHS 2002-03). Walking was the most frequently reported physical activity which boys and girls both participated in. Children who are never active are more likely to consume soft drinks, fast foods, baked goods and high fat snack foods. Obese children are more likely to be less active, come from lower income households and are more likely to live in larger communities. Children who are active on a daily basis and who eat a balanced diet are more likely to say that they are in excellent health (RHS 2002-03).

A study of the correlation between obesity and television viewing was undertaken in the Sandy Lake First Nations community (Hanley, Harris et al. 2000). This study found that children who watched more than five hours of television per day were associated with a 2.5-fold increase in the risk of becoming (or being) overweight, when compared to children who watched less than 2 hours of television per day (Hanley, Harris et al. 2000). In the same study, children with higher fitness levels and greater fiber intake were found to be less likely to be overweight (Hanley,

Harris et al. 2000). In another First Nations study, Bernard et al. found that overweight Cree schoolchildren and adolescents participated in significantly less physical activity and consumed significantly fewer servings of fruits and vegetables than did their normal weight peers (Bernard, Lavallee et al. 1995).

From Nova Scotia's 1997 First Nations and Inuit Regional Health Survey, it was found that 98 per cent of children watched television each week for an average of 2.9 hours each day (1999; First Nations Information Governance Committee., First Nations and Inuit Regional Health Survey National Steering Committee. et al. 2004). When asked about the availability of sports and cultural facilities in their community, fewer than half of Ontario First Nations youth reported having sports facilities. The most commonly cited needs were for a community swimming pool, followed by playground equipment, arena and drop-in centres (First Nations Information Governance Committee., First Nations and Inuit Regional Health Survey National Steering Committee. et al. 2004).

As issues of obesity in First Nations communities across the nation relate to a lack of exercise due to a sedentary lifestyle and poor nutrition and develop as habits over time, these areas may be useful targets for research and interventions throughout the life course. In the AFN's October 3, 2006 submission to the House of Commons' Standing Committee on Health, "Protecting Our Gifts and Securing Our Future, First Nations Children and Obesity: A Growing Epidemic", eight recommendations are provided:

- "A community-based, wholistic approach to First Nations children's obesity prevention programming involving the meaningful engagement of First Nations governments in related federal, provincial and territorial initiatives.
- Strategies focused at multiple levels to address significant health disparities due to non-medical determinants of health including poverty and social conditions including housing.
- Working within a First Nations Wholistic Health Strategy, engage communities to leverage existing successful programming such as Head Start and Comprehensive School Health Programs to bring programming to where children live, learn and play. The Aboriginal Head Start On-Reserve Program should be expanded as a universal program with its "Nutrition"

component changed to "Nutrition and Physical Activity" to reflect the important role of both factors in supporting healthy growth and development. The Program's "Health and Promotion" component should be expanded as well.

- Develop strategies to address marketing of energy-dense foods to children that do not contribute to the nutritious and balanced intake of foods.
- Establish health human resource policy to address building nutrition capacity in First Nations communities to enable the counseling, teaching, policy development, health promotion and research work needed to help communities fight disease and promote health (Aboriginal Nutrition Network, 2005).
- Strengthen First Nations-driven research in addressing the appropriate measures of First Nations children's health and in identifying effective practices to attain and maintain health and well being.
- Develop policies and programs that contribute to creating supportive school environments that promote healthy eating and physical activity using a wholistic approach which incorporates traditional practice and values.
- Resource First Nations' health initiatives to match needs and key cost drivers taking into consideration community size and location. (Seto 2006)"

Education

"[I]t is only logical to situate considerations of First Nations health within discussions regarding the care and education of young First Nations children" (Greenwood 2005). This is because, the negative impacts in a child's early years can lead to a "reduced readiness for school, low educational attainment, and problem behavior, and the risk of social marginalization in adulthood" (WHO 2003).

Access to education plays a significant role in determining the health status of both children and adults. Education provides knowledge about health, as well as social support systems and self-esteem opportunities. According to the WHO, access to effective and appropriate education can improve the lives of children and adults (WHO 2003). Education is both offered and obtained in diverse contexts and through diverse means. From early education passed on through oral

traditions to post-secondary institutional education, many educational contexts can promote healthy individuals and communities.

Access to education for First Nations children and youth is more restricted than for non-First Nations Canadians. On average, the First Nations population has levels of educational attainment that are about 80 per cent of those of other Canadians, based on Census data (Canada 1998). Previous reports by provincial health officers have shown a direct relationship between the health status of communities and their socio-economic conditions (Planning 2001). These reports argue that, in general, the better the ranking on indicators such as education, the lower the rate of premature death (Planning 2001).

Residential Schools Legacy

The formal school system in Canada has not always been successful in ensuring that First Nations students receive a quality education – one that allows them to obtain the qualifications and skills required to participate in the economy while maintaining ties with their culture. The legacy of the residential school system in Canada, which segregated First Nations children from their families and cultures for more than a century, continues to have impacts on First Nations students today. Lingering effects from residential school include high levels of suicide, alcoholism, and family violence in some First Nations communities (AFN 1994).

Today, some First Nations students face racism, discrimination, and lack of understanding from teachers and other students in relation to First Nations culture and traditions. A 2001 Report by the British Columbia Ministry of Health Planning notes that First Nations students do more poorly than other students and have more learning and behavioral concerns (Planning 2001). The report concludes that First Nations secondary school students are less likely to progress from year to year and less likely to graduate (Planning 2001).

Elementary and Secondary Schooling

At the elementary and secondary school level, First Nations students are overrepresented in special education programs (McBride SR 2001). The difference is greatest in the “severe behavior disorders” category, with First Nations students having a rate 3.5 times greater than the

non-First Nations students. According to McBride and McKee (2001), poverty, family dysfunction, exposure to drug and alcohol use, higher prevalence of fetal alcohol syndrome and the legacy of residential schools are some of the reasons that have been suggested for this higher rate (McBride SR 2001).

First Nations youth who rated their overall health as fair or poor are more likely not to attend school, experience learning problems or not liking school. The factors underlying reduced school performance among First Nations youth are also found to be related to overcrowding, increased alcohol consumption, smoking and sexual activity (RHS 2002-03). Eating a nutritious diet, participating in sports, music groups, traditional activities such as drumming and dancing, and engaging more frequently in physical activity are all good predictors of better school performance and attendance (RHS 2002-03).

Post-Secondary Schooling

Within the post-secondary educational system in Canada (including universities, university-colleges, and colleges), there has been a large gap in participation rates for First Nations people compared with non-First Nations people. According to 1991 Census data, non-First Nations were three times more likely to attend university and seven times more likely to graduate. Only about 0.1 per cent of those who graduated from nursing school in Canada are First Nations (Arnault-Pelletier, Brown et al. 2006). In 1997-1998, First Nations students represented only 1.5 per cent of the total student body in British Columbia’s post-secondary institutions (Education 1998).

Since 1998, a number of initiatives have been taken to increase access to elementary, secondary and post-secondary education for First Nations students. Recognizing the relationships between education, socio-economic status and health, governments, institutions and school boards are initiating programs that increase access to education for First Nations students while recognizing the importance of cultural connections. Examples include having First Nations representatives on Boards of Governors and employing First Nations education coordinators at schools and universities (Planning 2001). According to McBride and McKee, school completion rates and grade point averages for First Nations students graduating from grade 12 are rising, and the gap between First Nations and other students is gradually narrowing (McBride SR 2001).

However, more research is needed in relation to these successes and the interventions that have lead to them. It is imperative to examine their long-term effects, determining whether the successes are sustainable. According to the WHO, increasing the general level of education and providing equal opportunity of access to education will improve the health of adults and children in the long run when the health and well-being of individuals and communities is placed at the centre of interventions (WHO 2003).

Addictions

Addictions can play an important role in determining health and well-being of individuals, families and communities. Substance abuse remains the leading self-reported threat to health and quality of life for many First Nations people (Health Canada 2004). Substance abuse can be related to non-traditional tobacco use, alcohol abuse, and drug abuse. Addiction to tobacco, alcohol and various types of drugs can lead to poor physical, emotional and mental health both for individuals and for communities. According to the World Health Organization (WHO), alcohol dependence, illicit drug use and cigarette smoking are all closely associated with markers of social and economic disadvantage (WHO 2003). A 2006 study calculated that the social costs of alcohol, tobacco, and illicit drug use in Canada, including services such as health care and law enforcement, was $39.8 billion (Rhem 2006).

Due to various social determinants such as poverty, the residential school legacy, poor access to health care and education, and housing instability, addictions have become serious issues for some First Nations communities. Individuals turn to alcohol, drugs and tobacco and suffer from their use, but use is influenced by the wider social setting (WHO 2003).

Tobacco

In the First Nations communities, tobacco has a strong historical, ceremonial, spiritual, and medicinal function (Reading J 2002). Tobacco misuse is defined as the non-traditional use of commercial tobacco. Smoking cigarettes is the most common form of tobacco misuse (Planning 2001). Smoking has been recognized as one of the top risk factors for major chronic diseases, such as cardiovascular (Ellison LF 1999; Ellison 1999), chronic respiratory (Millar 1992); cancer

(RHS 2002/2003) and arthritis ((Silman 1996); (Hutchinson D 2001)). In addition to the illnesses above, chewing tobacco has also been linked to cancer of the mouth (Key 2002). Studies indicate that the rates of smoking as well as the use of smokeless tobacco are significantly higher in the First Nations populations throughout the world in comparison to the general population (Ellison 2003). Smoking rates are high (45 per cent) among the First Nations population in British Columbia – about twice the rate in the general population (23 per cent) (Planning 2001). First Nations people begin smoking at a younger age: almost 40 per cent began smoking before the age of 13 (Daniel, Cargo et al. 2004). Smoking rates were found to be the highest (65%) among 20 to 24 year old First Nations people (Health Canada 2004). The 1997 First Nations and Inuit Regional Health Survey revealed smoking rates of 62% for the First Nations population of Canada and 72% for the Inuit (RHS 1996-1997). The 2001 Regional Health Survey documented smoking rates of 58.8% among First Nations adults. In the broader Canadian population, there has been a significant decline in tobacco smoking among Canadian adults and youth (from 28% in 1999 to 18% in 2003). However, smoking rates in the First Nations adult population increased from 46% in 1991 to 58.8% in 2001.

Like many other health behaviors, smoking is related to social and economic conditions and people's ability to cope with life in healthy ways. As in the non-First Nations population, smoking is much less common among First Nations people who are employed, who have higher incomes, and who have a university education. Tobacco use seems to be a marker for the stresses that disadvantaged groups experience (Planning 2001).

Childhood and Adolescent Influence of Tobacco Smoking

The average age of smoking initiation among First Nations people also plays a significant role in the influence of tobacco smoking on children and adolescents. According to Ritchie and Reading (2004), the average age of smoking initiation among First Nations children was found to be 12.2 years old, where the youngest age was 4 years old ((Ritchie AJ 2004); (RHS 2002/2003)). By the age of 6, about 2% of First Nations children had initiated smoking, which doubled by the age of 8, and then doubled again by the age of 12, peaking at the age of 13 ((RHS 2002/2003),(Ritchie AJ 2004)).

Smoking affects not only physical health, such as respiratory health, but also mental health and child development. A five-year longitudinal study found statistically significant (p, 0.05) association between early smoking and high-risk behaviors in grade seven adolescents. For example, early smokers were 82 times more likely than non early smokers to engage in weekly marijuana use and 36 times more likely to engage in hard drug use. They were also 11 times more likely to engage in weekly drinking and 8 times more likely to engage in binge drinking. These adolescents were also at higher risk for low academic achievement and behavioral problems at school (Ellickson 2001).

A study conducted at the North American Indigenous Games in Winnipeg found the prevalence of tobacco smoking in the studied cohort of 570 First Nations youth (between the ages of 12 and 22) was 32% (Ritchie AJ 2004). The results of this study should be interpreted with caution due to possible limitation in terms of the population sampled – the participants of the study may be more health conscious than other First Nations youth because they were participating in a sporting event at the time of the study (Ritchie AJ 2004).

Intervention Programs

Major efforts are under way across Canada to reduce the use of tobacco. Tobacco control programs are on the Canadian government's priority list (DeCourtney 2004). The Government of Canada funded Health Canada's Tobacco Control Program in 2003 with $480 million over a five-year period. An additional $50 million was further allocated for development and implementation of the First Nations and Inuit Tobacco Control Strategy (Health Canada 2004). Tobacco control programs are also being implemented at the provincial and municipal levels, as well as through non-governmental organizations such as the Canadian Cancer Society. The Canadian Cancer Society has an advocacy campaign targeted at increasing taxes associated with First Nations purchase of tobacco products. They argue that this will promote a financial reason for cessation of smoking, as well as increase the tax revenue, which can be used for further education and cessation programs (CBC 2007). Education programs, cessation services, and community awareness activities aimed at First Nations youth should assist communities to bring down their high rates of smoking.

Alcohol

Alcohol abuse is a pathway that moves in two directions – people turn to alcohol to numb the pain of harsh economic and social conditions, and alcohol dependence leads to downward social mobility (WHO 2003). For example, alcohol is a contributing factor in almost four of every 10 accidental and violent deaths (Planning 2001). Research has shown that negative impacts of alcohol use are mostly associated with problem (or heavy) drinking, rather than with overall use (RHS 2002/2003). The National Cancer Institute (NCI) defines heavy alcohol use as a consumption of five or more drinks on any single occasion. First Nations adults in British Columbia drink alcohol less often than adults in the general population of Canada (2% vs. 3% respectively) (Jin A 2003). However, there are signs that alcohol is being consumed at inappropriate levels. The 1999 Northwest Territories Alcohol and Drug Survey has found high prevalence of heavy drinking in First Nations populations: 56.1% of First Nations people living in the Northwest Territories have five or more drinks per sitting when they drank, compared with 17.8% of non-First Nations people (Health Canada 2004). Overall, the 2002-2003 Regional Health Survey has revealed that heavy drinking is more prevalent in the First Nations (16%) than in the general Canadian population (6.2%) (RHS 2002/2003).

Childhood and Adolescent Influence of Alcohol

In a 1998 survey, it was found that 51% of grade 7-12 First Nations students had been binge drinking in the past month, compared with 43% of their non-First Nations counterparts (Planning 2001). According to the 2002/03 First Nations Regional Health Survey, alcohol drinking was reported among 42.2% of First Nations youth respondents and increased significantly with age (RHS 2002/2003).

Interventions

There is a growing body of evidence that social and individual risk factors such as childhood neglect, depression, attendance at residential/boarding schools and violence are associated with chronic or heavy drinking in First Nations populations (RHS 2002/2003). Although the data indicate that there may be lower rates of alcohol use among first Nations compared to the general population, significant concern still remains over the capacity of the community to respond to this issue (RHS 2002/2003). Current data from First Nations communities found that 63.6% of

respondents felt that no progress was being made in reducing alcohol abuse while only 6.6% felt that good progress was being made (RHS 2002/2003). The RHS recommends that health promotion programs and interventions must be designed to target households and families, as opposed to individuals. This approach may increase awareness across all age groups, may prevent uptake among younger household members and may increase the number of alcohol-free households. A household/family program might encourage a sense of togetherness, belonging and support (RHS 2002/2003).

According to the RHS 2002/2003, the impact of substance use can also be seen through the number of respondents who sought treatment for their addiction. Treatment was most often sought for alcohol abuse (16.3%) (RHS 2002/2003). Young males are less likely to seek treatment for alcohol abuse compared to their older male counterparts (RHS 2002/2003). The National Native Alcohol and Drug Abuse Program (NNADAP) is an example of a Health Canada program now largely controlled by First Nations communities and organizations (Canada 2005). NNADAP encompasses 45 treatment centres located in First Nations and Inuit communities (Canada 2005) and supports a national network of 52 residential treatment centres, with some 700 treatment beds. Approximately $30 million is spent annually through this program (Canada 2007). Other programs incorporate a variety of strategies for alcohol and drug intervention. In British Columbia, there is the BC Tri-Partite Transformative Change Accord (TCA) program that addresses First Nations mental health and addictions issues (Canada 2007). The Best Start program in Prince Edward Island is an on-reserve program, which identifies and addresses prenatal risk factors related to alcohol use (Canada 2007).

The Newborn Follow-up Program, which aimed to educate the public about alcohol and pregnancy, was implemented in Winnipeg, Manitoba in the early 1990s through support from Health Canada (Square 1997). The $11 million dollar program focused on healthy pregnancy, FAS/FAE public awareness, training and capacity development, coordination and strategic project funding (PHAC 2006).

The results of the 2002/2003 RHS study highlight a number of important differences between the substance use patterns of First Nations people and the general Canadian population; namely that

there are both higher rates of abstinence and a lower frequency of alcohol use in First Nations populations. These differences may be indicative of a rediscovery of traditional cultural attitudes and values towards alcohol and other substances. For example, those not consuming alcohol were more likely to have seen a traditional health over the past year than those consuming alcohol (RHS 2002/2003).

Drug Use

Drug use is a persistent problem among First Nations youth and adults living in Canada. The 1996 Northwest Territories Alcohol and Drug Survey revealed that First Nations people 15 years and older were almost 3 to 3.5 times more likely to have used cannabis, LSD, speed, cocaine, crack or heroin and 11 times more likely to have sniffed solvents or aerosols than their non-First Nations counterparts (Canada 2005). In 2001, 27% of First Nations adults reported using cannabis at least once in the past year (RHS 2002/2003). According to the Regional Health Survey 2002/2003, drug induced deaths of First Nations people were more than three times higher than those of the general population (RHS 2002/2003). The RHS argues that there is limited information from previous studies on drug use in the First Nations population and, therefore, additional research should be conducted in culturally-sensitive and participatory ways in order to increase knowledge around First Nations drug use issues. Although highly published in the media as a problem for First Nations communities, the reported use of inhalants was very low (0.2%).

Childhood and Adolescent Influence of Drug Use

In 2001, 32.7% of First Nations youth reported using cannabis at least once in the past year (RHS 2002/2003). By far, the highest frequency of users were males aged 18 to 29 (RHS 2002/2003). Twenty-nine percent of males in this age range reported the use of marijuana on a daily basis. In general, prescription drugs – including codeine, morphine and opiates – had the next highest frequency of use, with 12.2% reporting the use of these drugs over the past year (RHS 2002/2003).Although cannabis was found to be the most popular drug among First Nations and non-First Nations youth, there are other drugs of a high prevalence, illustrated in the following table.

Substance	Proportion using (%)
Chewing Tobacco	5.8
Cannabis	32.7
Amphetamines	1.5
Inhalants	1.5
Cocaine, crack, freebase	1.8
Codeine, Morphine, opiates	3.5
Heroin	0.2

** Adapted from the Regional Health Survey 2002-2003

Interventions

It is recommended that increased surveillance regarding the health impact of substance abuse and the integration of cultural components into prevention and treatment approaches be undertaken (RHS 2002/2003). Canada's National Drug Strategy was developed based on the following principles: education and prevention, treatment and rehabilitation, harm reduction, enforcement and control (Canada 2006). Within the scope of Canada's National Drug Strategy, there are a number of culturally-specific educational programs in Canada created to educate First Nations about substance abuse issues. The First Nations Shield Program is a substance abuse prevention initiative designed specifically for First Nations youth. The program content was developed by law enforcement specialists in partnership with the Nechi Institute on Alcohol and Drug Education and is oriented to supplement existing substance abuse education programs (Canada 2007). Treatment is also a central component of intervention campaigns. According to the RHS (2002/2003), approximately 7% of all RHS respondents reported that they had sought treatment for drug abuse while another 1.2% sought treatment for solvent abuse (RHS 2002/2003).

Existing data seem to suggest that transfer policies are a marker of community stability, which in turn can impact substance use and misuse. For this reason, the Regional Health Survey argues

that governments need to support First Nations in their efforts for self-governance. As part of self-governance, First Nations communities need to examine comprehensive, community-wide policies addressing the prevention of alcohol and drug abuse and dependence. Health Canada has recommended the collaboration of First Nations community leaders, health professionals, government and law enforcement agencies in the development of prevention frameworks (RHS 2002/2003). In turn, prevention programming must also be developed from a perspective that considers the social determinants of health. Poverty, lack of employment opportunities, reduced access to health and education services, the legacy of residential school and discrimination are just a few social determinants that impact the health and well-being of First Nations communities and that need to be at the centre of effective intervention programs.

Housing and Food Security

Housing and Living Conditions

"Inequalities in the distribution of and access to material resources – income, education, employment and housing – are the primary cause of health inequalities" (Seto 2006). This section's focus on housing builds on this understanding to demonstrate the importance of one's immediate environment – including their homes – on one's health. While houses are often thought to be safe spaces, indoor air pollution, which results from the infiltration of external air, tobacco smoke, biological material (mould, bacteria, pets), and combustion products (wood smoke, poorly ventilated heaters), can have adverse health affects (Canada. Health Canada., Canadian Lung Association. et al. 2001). As sources of indoor air pollution have been documented in many aboriginal communities (Harris, Glazier et al. 1998; Strachan 2000; Lawrence and Martin 2001; Cardinal 2004; Berghout, Miller et al. 2005), further research in this area is warranted.

The most culturally specific contributor to poor indoor air quality in aboriginal communities is the use of wood-burning stoves for heating and cooking (Morris, Morgenlander et al. 1990; Daigler, Markello et al. 1991; Harris, Glazier et al. 1998). Due to the fact that many First Nations communities are still using wood or coal burning stoves in their houses, they may be at a higher risk of developing cancers, respiratory illnesses, and other health concerns linked to pollutants

contained within the burning material and in the smoke emitted (Mumford, Lee et al. 1993). Like wood-burning stoves, steam baths are also thought to contribute to the development of chronic respiratory diseases, as concentrated and enclosed steam and smoke can put strain on the respiratory system and aggravate respiratory ailments (Petersen, Singleton et al. 2003). In many communities (i.e. native groups in the Yukon), steam baths are part of the daily routine and wood-burning stoves are the prime source of energy in the house. In addressing concerns about these items' impact on respiratory health, it is imperative that research has a cultural component: the spiritual nature and traditional aspects of these practices must be acknowledged.

Substandard housing also plays an important role in the presence and persistence of environmental hazards: "lack of adequate, affordable housing conditions continues to be a challenge for many First Nations communities" (British Columbia 2001). Housing quality on reserves has improved, but conditions are still poor: for example, 44% of on-reserve housing in BC is considered substandard (British Columbia 2001). Low income levels and other social factors are thought to contribute to such low living standards in First Nations communities, placing First Nations communities at greater risk than other Canadians (Fraser-Lee and Hessel 1994). Poor housing conditions in many First Nations communities, coupled with sanitation issues and poverty, put these populations at risk for, for example, chronic respiratory diseases (Petersen, Singleton et al. 2003). Crowding and poorly ventilated housing in many aboriginal communities is also thought to have negative health affects, as it encourages disease transmission and can hasten the development of chronic problems (Petersen, Singleton et al. 2003). According to RCAP's 1991 comparison of the housing condition of on-reserve and off reserve First Nations, Inuit, and Métis, "First Nations people are living in over-crowded and under-serviced homes" (Adelson 2005). For example, on-reserve First Nations averaged four persons per dwelling, which is greater than the average of three within the general population.

On top of this, poor economic status and geographic isolation exacerbate inadequate living conditions by reducing one's access to facilities, supplies, and support services. For example, a 2000 report by the Canadian Council on Social Development, entitled "Urban Poverty in Canada" showed that First Nations had the highest poverty rate, which averaged 55.6 per cent. The close connection between one's environment and their socioeconomic situation reasserts the

need to involve broader socio-cultural issues and to account for changes in living conditions over time. As First Nations communities continue to report poor housing conditions, indoor air pollution, crowding, and poverty, targeted research is urgently needed to investigate the impact that environmental factors have on aboriginal health and their relationship to chronic disease rates. Improvements seen in communities after relocation to better living arrangements and healthier environments substantiates (but does not causally prove) an association between chronic disease development and other long-term health risks and the environment. It can also be argued that more ecologic, multi-factorial approaches to disease prevention, such as upgrading housing and sanitary infrastructure, are needed to improve First Nations health (Jin and Martin 2003).

It is believed, however, that First Nations living conditions have improved since 1991. 1996 statistics show that most First Nations people remain below the poverty line and that approximately 20 per cent of on-reserve homes are over-crowded; while still disturbing, this is considered an improvement from crowding in one-third of on-reserve houses documented fifteen years ago (Campbell 2002). Other improvements worth noting are that: "96 per cent of reserves now have adequate water supplies and 92 per cent have adequate sewage" (Campbell 2002). *While Campbell argues that water and sanitation conditions have improved on reserve, a 2003 Indian and Northern Affairs Canada (INAC) survey found that 29 per cent of on-reserve water systems were posing potential high risk to communities while 16 per cent of wastewater/sanitation systems were also posing a similarly high risk (Canada 2003).* Beyond the need to better understand and improve the living conditions of the community infrastructures and buildings in which First Nations live, health factors associated with the actual location of Aboriginal populations in rural and remote communities have also been noted.

According to the 2006 study by the Canadian Institute for Health Information, rural or remote residence imposes several health risk factors: less-healthy diet, lower leisure time physical activity and higher smoking rates than their urban counterparts (CIHI 2006). First Nations are affected by the rural risk factors due to the fact that most First Nations populations reside in the northern territories of Canada, as can be seen in Figure 3.2.1 (Canada 2001). However, especially vulnerable are the First Nations, which are living on reserves (about 30 % of First

Nations population (CBC 2003)), due to the fact that reserves are often located in rural or isolated northern areas. It has been established that residents of reserves have higher mortality and morbidity rates, higher unemployment and poverty rates, and a lack of availability or access to health information and services (CIHI 2006). In addition, reserve residents are at higher risk of some chronic diseases and conditions, such as diabetes, respiratory and infectious diseases, mental health problems, drug and alcohol abuse (CIHI 2006).

Aboriginal peoples living in remote and northern territories of Canada are exposed to the complex of risk factors associated with rural living and life on reserves. It is important to recognize, however, that the impact of rural and remote living on one's health is a product of colonialism's impact on the traditional lifestyles of Aboriginal peoples. This is explained further below in relation to Aboriginal peoples' food security, which is used in the broad sense here to explain the consequences of the changing relation between Aboriginal people and their food and the factors that determine First Nations peoples' access to safe, nutritious, affordable, and culturally appropriate foods.

Food Security

"A good diet and adequate food supply are central for promoting health and well-being. The important public health issue is the availability and cost of healthy nutritious food. Access to good, affordable food makes more difference to what people eat than health education" (WHO 2003). As will be outlined below, the growing challenge facing First Nations health is achieving access to an adequate, affordable, nutritious, and culturally appropriate food supply within the current Canadian context.

"Prior to Canada's colonization by Europeans, the country's Indigenous population was organized into groups of hunting and gathering communities" (Campbell 2002). While "colonial expansion, industrialization and urbanization [has] produced a ready and continuous food supply within Indigenous communities" (Campbell 2002), traditional food supplies and practices have been compromised. For example, the somewhat "rapid transition form hunting and gathering to sedentary, reserve-based lifestyles, as well as a switch from a high-fiber, low-fat diet to one

based on low-fiber, high-calorie foods" (Campbell 2002) have negatively impacted the health of many First Nations people.

Numerous cancer studies have shown that high intake of animal proteins, fats and carbohydrates as well as low consumption of dietary fiber and plant foods increases the risk of developing breast, colon and prostate cancer (Slattery 2005). First Nations health researchers, studying cancer patterns, have discovered a sharp increase in the number of these cancers, especially cancer of the breast and colon in First Nations populations over the last 30 years. The explanation of this phenomenon may be found in the rapid dietary changes after colonization. Traditional First Nations diet, high in protein, moderate in fat, low in carbohydrates and often subject to seasonal food shortages, has changed to the "western" diet, which is high in fat and refined sugars (Key 2002). This dietary change has happened in a short period of time – less than a generation. As a result of these rapid dietary and life style changes, the incidence of cancers of colon, breast and prostate began to rise in First Nations populations, matching non-First Nations rates (Marrett 2003). The influx of Western foods into First Nations living has also reduced First Nations control of their food sources (and the land and/or sea from which it is obtained), which has further reduced the capacity for First Nations to maintain traditional ways of life. Even those who have been able to maintain traditional food practices, however, are at risk. This is due to the increasing number of environmental contaminants found in food and the growing number of studies documenting the health risks of shifting diets.

Traditional First Nations food sources have been found harmful for a number of reasons and in a number of cases. For example, seafood, the main source of food in coastal communities, is now heavily polluted with mercury and other pollutants/contaminants, which predisposes First Nations people to various cancers of the digestive system. Researchers have also found that the members of the Pacific Northwest Tribal Nations on average consume 10 times more fish and seafood than the average US consumer, and are significantly exposed to persistent pollutants and bio-toxins found in fish and shellfish (Wiseman and Gobas 2002; Judd, Griffith et al. 2003; Judd, Griffith et al. 2004). Another dietary risk factor associated with the development of stomach cancer is traditionally preserved salted foods, especially meats and pickles (Key 2002). The effects of these dietary and environmental risk factors to which First Nations populations are

especially exposed can be seen in the high prevalence of stomach and kidney cancer (Santini, Rigas et al. 1999; Amling 2004; Moore, Wilson et al. 2005)

In addition to the environmental and sociological effects of de-stabling traditional practices and right to their land and culture, changing patterns of food supply and food gathering tactics have had serious health effects: “A move away from diet based on hunting and gathering food to a sedentary way of life and poor nutrition have contributed to” (Campbell 2002) the exacerbated the presence of obesity, diabetes, and other health concerns in First Nations communities. The specific, and extremely pressing, issue of obesity is examined further below.

Obesity

Clinical obesity is diagnosed when a body mass index (BMI) is 30 kg/m^2 or higher (Dictionary 2002). Obesity has been linked to major chronic diseases, such as arthritis, diabetes (Grundy 2004; Ziegler 2005), cardiovascular diseases (Kue Young 1998) and cancer (Mokdad 2003). For example, individuals with body mass index of 35.0 or more were found to be 20 times more likely to develop diabetes than their same sex peers with BMI between 18.5 and 24.9 (Field 2001). It has been also recognized that “the distribution of body fat as important as, or more important than, overall obesity as the risk factor” for specific chronic diseases (Kue Young 1998). In particular, obesity of the abdominal area causes most risk for chronic diseases (Szathmary and Holt 1983; Field 2001) and is most common in First Nations populations (Szathmary 1983; Delisle, Rivard et al. 1995; Harris, Caulfield et al. 1997; Harris, Gittelsohn et al. 1997). A strong association of abdominal fat distribution and glucose intolerance and diabetes has been proven in the studies involving the following First Nations populations: Dogribs in the NWT, Oneida and Ojibwa in Southwestern Ontario and First Nations in Sandy Lake, Ontario (Kue Young 1998).

The lack of physical activity and total energy intake are the most common causes of obesity (Kue Young 1998; WHO 2003). With the loss of First Nations traditional lands and practices, such as hunting, trapping and fishing, a higher proportion of First Nations people began to lead more sedentary lifestyles. In addition, there was an adoption of a non-traditional (or so-called

"western[5]") diet by First Nations after colonization. As a result of these and other socio-economic changes, the percentage of inactive and obese individuals in First Nations communities has increased (RHS 2002/2003). According to the follow-up 2002/2003 survey, the percent of individuals with higher BMI in the First Nations populations was higher than in the general Canadian population, and it is summarized in the Table 3.3 below (RHS 2002/2003).

Comparison of body weight groups among and between First Nations and Canadian Adults

Body Weight	First Nations Adults	Canadian Adults
Normal	25.9%	49%
Overweight	37.0%	33%
Obese	31.2%	15%

Furthermore, men were found to be overrepresented in the group of overweight individuals, while First Nations women were prevalent in the group of obese and morbidly obese individuals (RHS 2002/2003).

The growing problem of obesity in First Nations communities must be further understood and addressed in the Aboriginal context (Seto 2006). Building on obesity intervention programs that are included in current Aboriginal health promotion and education programs or into the intervention programs specific to some diseases[6] (Young 1994; Young and Harris 1994).

Deficiencies

Often thought to be on the flip side of the health concern associated with obesity are issues of nutrient deficiency and/or hunger. It is important to note, though, that one could also be under-

[5] Western diet is high in fat and protein and low in fibre.
[6] For example, the Physical Activity Unit has been established to help Canadians improve their health through regular physical activity, and it is positioned within the Healthy Living Strategy, an intersectional initiative designed to improve health outcomes and reduce disparities in health status in Canada
PHAC, P. H. A. o. C. (2006). Programs.. Aboriginal Head Start Initiative (AHS) is an early intervention strategy which addresses the needs of young Aboriginal children 0-6 living in urban centres and large northern communities , and designed to meet the spiritual, emotional, intellectual and physical needs of the child
PHAC, P. H. A. o. C. (2006). Programs.. Another physical activity promotion program "ACTIVE 2010" helps Aboriginal organizations by providing opportunities for physical activity, community sport and recreation in Ontario
Health Council of Canada, H. (2007). Aboriginal Health. Current Initiatives..

nourished and obese, especially if the food source is based on high-sugar, high-fat (as has been the case with the First Nations diet since contact). This should be considered in all research on the health and food security of First Nations people.

Studies of diet among the First Nations population in Canada continue to develop as more rural and remote communities come into greater contact with Western cultures. New diet patterns related to this process of acculturation place Indigenous communities at risk of malnutrition: traditional food now provides less than 30% of total dietary energy, despite this food's proportionally greater contribution of essential nutrients (Murphy, Schraer et al. 1995). In addition, it has been repeatedly shown that First Nations people have low intakes of many nutrients[7] and that children are the most adversely affected by poor nutritional status (Nutrition Canada. and Nutrition Canada. 1975; Moffatt 1995; Lawn, Langner et al. 1998; Kuhnlein, Receveur et al. 2001; Jenkins, Gyorkos et al. 2003; Kuhnlein, Receveur et al. 2004). One of the primary reasons for nutrient deficiency is hunger. Off-reserve First Nations families were overrepresented among those experiencing hunger. Instances of hunger also coexisted with poor maternal health, a sedentary lifestyle, and poor child health (McIntyre L 1986). Although not all aboriginal people suffer nutritional concerns, are hungry, or face any associated issues, the documented presence of such problems in First Nations communities requires further examination within the First Nations context so that appropriate action can be taken to deal with this significant health concern (Moffatt 1995).

Healthcare Access

It has been documented that "[d] ifferential access to health care services and differences in care for those receiving services also has a considerable impact on health status and mortality" (AFN 2005). Nevertheless, it is important to note that access to Canadian health care programs and services is only one determinant of the development and provision of effective health care in Aboriginal communities. This is because:

[7] Nutrient deficiencies commonly reported in aboriginal communities are for iron, vitamin D, calcium, folate, vitamin A, and fluoride.

"First Nations people may also utilize 'western' health services to complement healing and wellness practices or vice versa. Primary health care is thus only a portion of care and healing activities that First Nations depend on for health and wellness" (RHS 2002/2003).

More research analyzing the different types of health care utilized by First Nations and their interactions will be necessary. While such studies are not yet available, an overview of the statistics related to First Nations' access to the Canadian health care system, and other governmental health services for First Nations peoples is investigated throughout this section. It is also important to note that there are adverse effects of health care access including mortality due to medical errors and infectious outbreaks in health care facilities. Adverse events are defined as unintended injuries or complications resulting in death, disability or prolonged hospital stay that arise from health care management (Baker GR 2004). A 2004 study conducted in five Canadian provinces found an overall incidence rate of medical errors of 7.5% and found a significant number of these events were preventable (Baker GR 2004). In addition to adverse events, there are also issues associated with impacts of outbreaks in health care facilities (Maunder R 2003). For example, the outbreak of severe acute respiratory syndrome (SARS) in some Canadian hospitals in 2003 resulted in extraordinary public health and infection control measures that left some patients in fear and anger (Maunder R 2003). Adverse events and disease outbreaks can lead to negative health care experiences which impact access to health care.

Although self-rating of access to health care by First Nations has improved from earlier studies documenting this information (RHS 1996-97), inequities are still found to exist between First Nations and the general Canadian population's access to primary health care (RHS 2002/2003). Overall, 40.8% of respondents to the Regional Health Survey were found to rate their access to health services as the being the same as that of other Canadians: rounding out the figures, "23.6% rated their access as being better, whereas 35.6% rate their access as being less than that of Canadians" (RHS 2002/2003).

Like other Canadians, First Nations people have noted that waiting lists pose a barrier to health services. However, cultural barriers further create problems for First Nations people to access adequate and appropriate health care (Campbell 2002): "Language, high costs, transportation,

and unavailable services available locally and inadequate services are some of these barriers"(RHS 2002/2003). These and others are examined further below.

Barriers to Health Care Access

In a study by Newbold (1997) documenting the utilization of physicians among First Nations, it was found that utilization rates were much lower. In fact, First Nations were less likely to have seen or gone to a physician even after the information was controlled for the younger population (Newbold 1997). In examining the reasons for this lower physician use, the researcher identified some important factors that can be seen as reflecting broader concerns about First Nations access to health care.

Location

"Geographical and environmental considerations often preclude physical access to care, given the distance between many First Nations reserves and urban centres where health facilities are concentrated, and the remote locations of many First Nations communities that are frequently difficult to access" (Campbell 2002). Consider the following account of a First Nations population located in remote areas:

"Those located in remote areas, such as the Cree, are visited by rotating staff of non-Indigenous physicians and nurses from urban centres. Frequently, messages and information delivered by one set of care providers may conflict with those given by others, frustrating efforts to provide clear information to community members about the best course of behavior to follow to prevent or treat illness" (Campbell 2002).

The importance of location was further revealed by Newbold (1998): he concluded that geographic location, as compared with First Nations identity, appears to have a large impact with respect to health status and use of physician services (Newbold 1998).

Education and awareness

As documented by Newbold (1997) 'non-price factors', such as education, can act as significant barriers to the use of health services, such that those less educated are less likely to access health

services. A major reason for this is the lack of knowledge of resources and lack of understanding of the health care system and its services (Newbold 1997). The impact of limited education and lack of awareness is most obvious among children and youth, as they are often unaware of their health condition and uninterested in learning about best ways to ensure healthy living (Campbell 2002).

Cultural factors

Culture and language have been associated with health care access. For example, because “First Nations have tended to be adversely affected by the dominant Canadian or European culture” (Newbold 1997), the more limited access to health care within the First Nations population “may owe much to a western health care system, while not considering the needs of the First Nations population, based on tradition and culture … Those who speak First Nations languages and those who perceive cultural events as important are more likely to report difficulties an barriers accessing care” (RHS 2002/2003). Conversely, the inclusion of First Nations activities and traditions into health care and health cares practices has been shown to positively impact the use of health services (Newbold 1997). When analyzed through a gender lens, it has been noted that First Nations women continue to be marginalized and disadvantaged by the health care system: narratives of women’s experiences reveal that women’s encounters are often shaped by racism, discrimination, and structural inequities (Browne and Fiske 2001). For all First Nations people, however, “[l]inguistic and cultural barriers, as well as racism and stereotypes, lead not only to misunderstandings and frustrations, but can result in inferior diagnosis, care, and outcomes” (RHS 2002/2003). In order to overcome these inequities, it is thought that ensuring “cultural safety” and “cultural competency” within the Canadian system is necessary. In other words, there is a need to ensure that culturally appropriate care is made available to First Nations populations. This adds to the argument that more First Nations physicians and First Nations controlled health services are needed. The specific need for improving linguistic concerns (i.e. ensuring the presence of translators, elders, or family members able to communicate with the patient) is two-fold: first of all, those who do not speak an official language in Canada have been documented as not receiving the same level of care; secondly, language is what connects people to their spiritual and emotional roots (RHS 2002/2003).

Economic issues

"Economic considerations also may bar access to appropriate care" (Campbell 2002). This is because they may limit the ability for transportation to receive health care, to take time off work to attend health appointments, and/or pay ensures that the necessary resources are available for maintaining and promoting good health. Those who highlight Canada's Medicare system and First Nations benefits under treaty rights as leveling factors, however, often repute the economic argument. "While access to free medical care in Canada, coupled with the arguable scope of First Nations treaty rights, diminish the extent to which economic [and other] factors might impede access to health care" requires further analysis (Campbell 2002). An examination of the Non-Insured Health Benefits (NIHB) program and the perplexing dilemma it creates for understanding and assessing equitable health care is also required. According to the Report from the 2002-03 Regional Health Survey, the Non-Insured Health Benefits program for First Nations people has produced a perplexing dilemma:

"According to Health Canada, Non-Insured Health Benefits (NIHB) is provided in order to assist First Nations in reaching an overall health status on par with other Canadians. Thus, NIHB should at least in part, help alleviate geographic and economic barriers to access care. The evidence documented in this survey shows that current access rule to NIHB may be creating barriers in these areas rather than alleviating them" (RHS 2002/2003).

One barrier to the benefits of NIHB that is created by the NIHB system is the cumbersome and its often-confusing rules. Consequently, NIHB have become an increasingly controversial issue for First Nations. This is because:

"These health provisions are seen by most as a Treaty right that cannot be eroded as a result of shift in federal priorities, polities or for cost containment. The federal government has instead taken the position that NIHB are provided to First Nations as a matter of policy, on humanitarian ground" (RHS 2002/2003).

This tension gets to the root of issues related to First Nations-government relations that continue to impact and structure the health and well being of First Nations peoples in Canada.