UNDERSTANDING CHRONIC DISEASE AND THE ROLE FOR TRADITIONAL APPROACHES IN ABORIGINAL COMMUNITIES

Lynda Earle, BSc, MD, MPH, CCFP

SOCIAL DETERMINANTS OF HEALTH

Chronic diseases are those that develop and are experienced over long periods of time, influenced by both environmental and individual factors.[1] The main chronic diseases are diabetes, cardiovascular disease (heart disease and stroke), cancer, and chronic respiratory diseases. Chronic diseases result from both modifiable and non-modifiable risk factors. These risk factors contribute to high blood pressure, high blood glucose, abnormal blood lipids and abnormal body weights.[2] The major forces driving the prevalence of risk factors include social, economic, political and environmental factors known as the determinants of health.[3] Aboriginal* Canadians disproportionately suffer from chronic diseases and their common risk factors. Incorporating traditional and holistic Aboriginal approaches into prevention interventions is important.

This review examines the impact of chronic disease (specifically diabetes, cardiovascular disease, cancer, and chronic respiratory disease) on the Aboriginal peoples of Canada, and the risk factors that underlie the prevalence of these diseases. It concludes with a brief overview of traditional and holistic Aboriginal approaches to chronic disease prevention. The discussion is based on English language articles retrieved from both peer-reviewed and grey literature sources through a variety of methods including the use of scholarly databases, reference list reviews and web-based searches. Information sought included data on the health status of North American Aboriginal peoples with respect to chronic diseases and their risk factors, as well as the ways in which traditional activities, lifestyle, culture and holistic health views might influence interventions.

Chronic Disease and Risk Factors in Aboriginal Communities

It is challenging to analyze the health status of Aboriginal peoples due to the diversity of nations as well as data limitations, such as incomplete coverage of Aboriginal peoples and substandard data quality.[4] Despite this, it is clear that rates of chronic disease and their risk factors are much higher in Aboriginal Canadians than in the general Canadian population.

Diabetes

In 1991, the Aboriginal Peoples Survey revealed crude rates of diabetes of 6.4% for First Nations, 5.5% for Métis, and

NATIONAL COLLABORATING CENTRE FOR ABORIGINAL HEALTH
CENTRE DE COLLABORATION NATIONALE DE LA SANTÉ AUTOCHTONE

* 'Aboriginal' throughout this fact sheet refers collectively to the Indigenous inhabitants of Canada, including First Nations, Inuit and Métis peoples (as stated in Section 35(2) of the *Constitution Act,* 1982).

1.9% for Inuit, as compared to 3.1% for the general population.[5] Despite the initially lower prevalence of diabetes in the Inuit, by 1999 a 4% rate of diabetes was found in the Labrador Inuit.[6] A concerning trend of increasing prevalence over time has been documented in other Aboriginal populations; over 10 year periods, the prevalence of diabetes increased by 45% in the Sioux Lookout Zone of Ontario, and doubled in Saskatchewan Aboriginals.[7] Diabetes increased by 66% over 8 years amongst Métis in northern Alberta.[8] By 2003-04, the prevalence of diabetes was 19.7% among First Nations Canadians.[9] The available numbers likely under-represent the true prevalence of diabetes in Aboriginal Canadians by as much as two to three times due to undiagnosed cases.[10]

There are considerable differences in the rates of diabetes experienced by different Aboriginal populations. Language, culture group and geography are all important factors affecting the prevalence of the disease.[11] First Nations people living on-reserve have higher rates of diabetes than those living off-reserve (8.5% compared to 5.3%).[12] Aboriginal peoples living off-reserve in southern Canada have higher rates than those living off-reserve in the north (6.4% compared to 3.8%).[13]

Prevalence also varies by community; the rate of diabetes in one village on Haida Gwaii is 17% in adults over 35 years of age[14] while the overall prevalence among First Nations peoples in Sandy Lake, Ontario is 26.1%.[15] Type II diabetes is now a concern for Aboriginal children and youth, with increasing rates appearing at young ages.[16] More First Nations youth are diagnosed with diabetes than youth in the general Canadian population.[17]

Cardiovascular disease

Self-report survey data, hospital admission data and mortality rates demonstrate a disproportionate burden of cardiovascular disease among Aboriginal Canadians. Rates of disease have been rising over the past 40 years.[18]

Data from the 1997 First Nations and Inuit Regional Health Survey suggest heart disease is five times higher among First Nations and Inuit peoples than the rest of the Canadian population.[19] More recent data from the Six Nations Reserve in southern Ontario revealed a significantly higher prevalence of cardiovascular disease in First Nations (17%) compared to non-Aboriginal individuals (7%).[20] In 2006/2007 in British Columbia, rates for stroke were 70% higher, ischemic heart disease 25% higher and congestive heart failure 75% higher for Status Indians than for other residents of the province.[21]

In 2000/2001, the mortality rate for acute myocardial infarction in First Nations people living on-reserve was 72.7/100,000 people compared to 52.1/100,000 for other Canadians. Similarly, the mortality rate for stroke was 71.5/100,000 people for First Nations people living on-reserve compared to 34.2/100,000 in the general population.[22]

In the 1970-1980s, data from the Northwest Territories suggested the Inuit experienced lower mortality rates due to cardiovascular disease, however 1990's data from Nunavut and the Nunavik region did not show significant differences from the rest of Canada.[23] Whether this represents geographic variation or increases over time is uncertain, and further data is needed to understand the burden of cardiovascular disease among Inuit, Métis and urban Aboriginal populations.[24]

Cancer

There are many different types of cancer. Combined with data limitations, this makes broad conclusions less meaningful. In general, many cancers appear to have

been less prevalent historically among Aboriginal Canadians,[25] although this health advantage seems to be disappearing, depending on the particular cancer.

Cancer mortality rates in First Nations people are lower than in other Canadians for lung, colorectal and breast cancer, while mortality due to prostate cancer in men is higher.[26] However, trends reflected in Ontario data from 1968-2001 suggest that overall cancer incidence is increasing at a faster rate among First Nations peoples, than in the rest of the population. Additionally, they have lower cancer survival rates compared to other Ontarians.[27]

Among the Inuit, it has been suggested that a shift is occurring; rates of "traditional" cancers (nasopharyngeal, salivary and esophageal) are declining while rates of lung, cervical, breast and colon cancers are increasing.[28] While preliminary work has been undertaken to explore the burden of cancer in Métis people, overall the data is limited and does not permit general conclusions.[29]

Chronic respiratory disease

While chronic respiratory diseases encompass a number of different conditions, the discussion here has been confined to asthma and chronic obstructive pulmonary disease (COPD) in adults. Data suggest Aboriginal Canadians suffer a disproportionate burden from these two diseases compared to other Canadians.

First Nations adults living on-reserve have higher age-adjusted rates of asthma and chronic bronchitis than other Canadians.[30] As with diabetes and cardiovascular disease, geographic factors contribute to this higher prevalence. Aboriginal adults over age 20 who lived off-reserve in southern Canada experienced higher rates of asthma than other Canadians, while in the North, this relationship was reversed.[31] In British Columbia, age-standardized rates of COPD were 60% higher in Status Indians than the general population,[32] while in Alberta, Aboriginal peoples were more likely to visit to the emergency room and office for asthma and COPD than were the general population.[33]

Chronic disease risk factors

Aboriginal peoples have undergone significant transitions as a result of the loss of traditional ways of living. Income, education, living conditions and Aboriginal-specific determinants such as colonization, dispossession of land, and loss of traditional practices required for health all contribute to poorer health status.[34] In turn, these determinants influence the most proximal and modifiable risk factors for chronic disease: diet, physical activity and tobacco use.

Traditional consumption of low-fat, high nutrient foods requiring high-energy expenditure in their acquisition has been replaced by diets high in fat and sugar, and a more sedentary lifestyle.[35] Data on Aboriginal Canadians living off-reserve reveals the following: 58.3% of Aboriginal adults living off-reserve are physically inactive;[36] overweight and obesity is more common in adult Aboriginal Canadians than the general population;[37] and 41.3% of Aboriginal children and youth living off-reserve in Canada are overweight or obese compared to 26.2% of the general population.[38]

In addition, Aboriginal Canadians have a 60% prevalence rate of smoking, compared to 25% among other Canadians.[39] Inuit living in the North have the highest rates of smoking at 70%, with almost half of these smokers beginning before age 14.[40] In general, Aboriginal youth have greater

rates of smoking and begin smoking at younger ages than do other youth.[41]

Addressing Chronic Disease Through Tradition and Holism

The need for Aboriginal approaches to health and healing has been well recognized by Aboriginal organizations, and within health and government sectors.[42] Western medical models, which view disease as arising from the body and its components, do not account for the physical, emotional, intellectual and spiritual elements of Aboriginal conceptions of life, health and well-being.[43] This understanding is an integral part of traditional knowledge, which is transmitted intergenerationally through mechanisms such as storytelling, ceremonies, values, medicines and traditional ways of living.[44] Holistic approaches to health and well-being consider physical, emotional, intellectual and spiritual elements, as well as the environment and social institutions such as family and community.[45]

Increasingly, traditional and holistic Aboriginal approaches are being used in chronic disease prevention. Considered here in a broad sense, utilizing 'traditional and holistic Aboriginal approaches' may range from integrating Aboriginal knowledge, values and perspectives into existing programs to ensure cultural safety, to developing new prevention programs in collaboration with communities using decolonizing methodologies, to promoting the health benefits of traditional activities, practices, healing and diets through programs or broader policy initiatives. The comprehensive nature of holistic and traditional approaches means that interventions incorporating them are diverse and occur in many settings, thus may influence chronic disease outcomes through a variety of mechanisms. For example, traditional approaches have been integrated into diabetes prevention in school and community settings,[46] obesity prevention in the home,[47] and health promotion in urban health care centers.[48]

Targeting modifiable risk factors

Traditional Aboriginal diets were high in protein and low in fat and carbohydrates.[49] Research in the Arctic among First Nations, Dene/Métis, and Inuit has shown that on days when more traditional food was consumed, intake of protein, riboflavin, iron, zinc, copper, magnesium, manganese, phosphorus, potassium, selenium and vitamins A, D, E, and B-6 was significantly higher than on days with greater market food consumption. In addition, individuals ate significantly less fat, carbohydrates and sugar.[50]

Traditional activities involved in acquiring food were highly physical and included hunting, fishing, trapping, gathering and growing.[51] Reclaiming the benefits of healthier diets and active living has been the focus of many preventative interventions to improve diet and physical activity among Aboriginal Canadians.

In response to evidence of the nutrition transition, the Inuit community of Pangnirtung used participatory research and story-telling to develop a community health promotion intervention based on traditional foods.[52] Through documentation of traditional country food knowledge, the use of Inuktitut educational stories, and grocery store initiatives, the goal is to improve healthy food choices.

Several long-running interventions in First Nations communities have aimed to

prevent diabetes through the promotion of healthy diets and physical activity. Both the Kahnawake Schools Diabetes Prevention Project and the Sandy Lake Health and Diabetes Project have utilized participatory and culturally appropriate research to inform the development of community and school intervention initiatives that incorporate traditional culture and knowledge.[53] Evaluation of the Kahnawake project suggested early beneficial effects on measures of body fat, however this was not sustained.[54]

The *Zhiiwapenewin Akino'maagewin*: Teaching to Prevent Diabetes intervention was implemented in four northwestern Ontario communities.[55] It included school, store and community elements and was based in part on the Sandy Lake project. While no differences were found between intervention and control communities in terms of physical activity and obesity measures, the study did demonstrate significant changes in knowledge and the frequency of obtaining healthy foods either through purchase or hunting and fishing.

A pilot study comparing two approaches to lifestyle intervention among Pima Indians in the United States found improvements in physical activity using both approaches.[56] However, the group that participated in unstructured activities that highlighted history and culture showed decreased starch intake and decreased waist circumference. Those in the comparison group using structured physical activity gained more weight, had higher blood sugars and higher blood pressures.

Pathways is a culturally appropriate American school-based program promoting health and obesity prevention in American Indian children. It has been found to positively affect cultural identity, food and activity knowledge, as well as self-reported food choices and activity behaviours.[57]

Traditional approaches including values, legends, stories and holistic views of health have been incorporated into a skills-based intervention to prevent substance use in Native American youth. After three and a half years, those receiving the intervention used smokeless tobacco (chewing tobacco or snuff), alcohol, and marijuana less than those who did not receive the intervention. There was no difference found for cigarette use.[58]

In summary, there is a growing body of evidence that demonstrates the application of traditional Aboriginal knowledge, and holistic approaches can positively influence modifiable risk factors for chronic disease.

Influencing determinants of health

The holistic nature of the Aboriginal world-view suggests an imbalanced focus on the physical elements of disease and risk factors may be less relevant for Aboriginal peoples, and may even cause stress.[59] Additionally, determinants of health beyond personal health practices may be more pressing. Research on the leisure-like pursuits of urban First Nations and Métis diabetics in Winnipeg revealed that for most, diabetes was not their central concern.[60] Instead racism, the legacy of loss, abuse, and the challenges of finding housing, employment and income figured prominently. Leisure activities were culturally based and the goals of these activities included fostering the development of pride, identity and meaning.

It is generally accepted that reducing the health disparities between Aboriginal and non-Aboriginal Canadians will require efforts to address influential determinants

of health.[61] In addition to their direct focus on modifiable risk factors, many of the interventions described above influence determinants of health important in preventing chronic disease. For example, the explicit incorporation of Aboriginal traditions and culture into programs contributes to the recovery of indigenous knowledge and culture that is an important part of the decolonizing process.[62] Being able to live one's cultural values may be important in supporting healthy behaviours,[63] as these traditional values serve as a basis for decision-making.[64]

The use of participatory research in designing interventions is a way to increase ownership and control, important aspects of community empowerment.[65] Community capacity building and empowerment are recognized as important in disparity reduction.[66] Community control of the Kahnawake intervention informed the nature of the studies conducted,[67] and subsequent evaluation demonstrated a working model of participatory and shared governance consistent with Mohawk culture.[68]

Incorporating traditional and holistic approaches will also influence access and utilization of health services, in part by increasing their cultural relevance and value. For example, some of the best-attended components of a diabetic intervention program among the Haida were traditional diet and herbal medicine trials.[69] It has been suggested that utilization of health services such as smoking cessation interventions might improve with increased cultural congruence, which traditional healers might be best positioned to provide.[70] The need for culturally relevant cancer screening and education, and culturally safe environments for First Nations people, has also been identified.[71]

Conclusion

Aboriginal Canadians disproportionately suffer from chronic diseases and their common risk factors. Employing traditional and holistic Aboriginal approaches is important for chronic disease prevention in Aboriginal communities. Such approaches may be applied to directly influence modifiable risk factors such as diet and physical activity. Importantly, utilizing traditional and holistic Aboriginal approaches may also influence broader determinants of health, offering the promise of reducing disparities in chronic disease.

References

1 WHO (2005). Preventing Chronic Diseases: A Vital Investment: Who Global Report. Geneva: World Health Organization.

2 Ibid.

3 Ibid.

4 Smylie, J. & Anderson, M. (2006). Understanding the Health of Indigenous Peoples in Canada: Key Methodological and Conceptual Challenges. Canadian Medical Association Journal 175(6): 603-605.

5 Health Canada (2001). Diabetes among Aboriginal (First Nations, Inuit and Métis) People in Canada: The Evidence. Ottawa, ON: Health Canada, http://www.hc-sc.gc.ca/fniah-spnia/pubs/diseases-maladies/_diabete/2001_evidence_faits/sec_2-eng.php.

6 Ibid.

7 Young, T.K., Reading, J., Elias, B., & O'Neil, J.D. (2000). Type 2 Diabetes Mellitus in Canada's First Nations: Status of an Epidemic in Progress. Canadian Medical Association Journal 163(5): 561-566.

8 Ralph-Campbell, K., Oster, R., Connor, T., Pick, M., Pohar, S., Thompson, P. et al. (2009). Increasing Rates of Diabetes and Cardiovascular Risk in Métis Settlements in Northern Alberta. International Journal of Circumpolar Health 68(5): 433-442.

9 Assembly of First Nations (2007). First Nations Regional Longitudinal Health Survey (RHS): Results for Adults, Youth and Children Living in First Nations Communities. Ottawa, ON: AFN.

10 Health Canada (2001).

11 Young et al. (2000).

12 Health Canada (2001).

13 Lix, L.M. , Bruce, S., Sarkar, J., & Young, T.K. (2009). Risk Factors and Chronic Conditions among Aboriginal and Non-Aboriginal Populations. Health Reports 20(4): 21-29.

14 Heffernan, C., Herbert, C., Grams, G.D., Grzybowski, S., Wilson, M.A., Calam, B. et al. (1999). The Haida Gwaii Diabetes Project: Planned Response Activity Outcomes. Health & Social Care in the Community 7(6): 379-386.

15 Harris, S.B. (1998). What Works? Success Stories in Type 2 Diabetes Mellitus. Diabetic Medicine 15(Suppl. 4): S20-S23.

16 Young et al. (2000).

17 Health Canada (2001).

18 Reading, J. (2009). The Crisis of Chronic Disease among Aboriginal Peoples: A Challenge for Public Health, Population Health and Social Policy. Victoria, BC: Centre for Aboriginal Health Research.

19 First Nations Centre (2004). First Nations and Inuit Regional Health Surveys, 1997: A Synthesis of the National and Regional Reports. Ottawa, ON: National Aboriginal Health Organization, First Nations Centre.

20 Myers, K.A. (2002). Cardiovascular Disease and Risk in the Aboriginal Population," Canadian Medical Association Journal 166(3): 355.

[21] British Columbia Provincial Health Officer (2009). Pathways to Health and Healing: 2nd Report on the Health and Well-Being of Aboriginal People in British Columbia. Victoria, BC: Government of BC.
[22] Health Canada (2005). First Nations Comparable Health Indicators. Ottawa, ON: Health Canada, http://www.hc-sc.gc.ca/fniah-spnia/diseases-maladies/2005-01_health-sante_indicat-eng.php.
[23] Young, T.K. (2003). Contributions to Chronic Disease Prevention and Control: Studies among the Kivalliq Inuit since 1990. International Journal of Circumpolar Health 62(4): 323-330.
[24] Reading (2009).
[25] Assembly of First Nations (2009). Access to Cancer Screening and First Nations. Ottawa, ON: AFN.
[26] Health Canada (2005). First Nations Comparable Health Indicators.
[27] Assembly of First Nations (2009).
[28] Bjerregaard, P., Young, T.K., Dewailly, E., & Ebbesson, S.O.E. (2004). Indigenous Health in the Arctic: An Overview of the Circumpolar Inuit Population," Scandinavian Journal of Public Health 32: 390-395.
[29] Reading (2009).
[30] Butler-Jones, D. (2008). The Chief Public Health Officer's Report on the State of Public Health in Canada 2008. Ottawa, ON: Public Health Agency of Canada.
[31] Lix et al. (2009).
[32] British Columbia Provincial Health Officer (2009).
[33] Sin, D.D. et al. (2002). Asthma and COPD among Aboriginals in Alberta, Canada. Chest 121: 1841-1846.
[34] King, M., Smith, A., & Gracey, M. (2009). Indigenous Health Part 2: The Underlying Causes of the Health Gap. Lancet 374: 76-85; Loppie Reading, C. & Wien, F. (2009). Health Inequalities and Social Determinants of Aboriginal Peoples' Health. Prince George, BC: National Collaborating Centre for Aboriginal Health.
[35] Compher, C. (2006). The Nutrition Transition in American Indians. Journal of Transcultural Nursing 17(3): 217-223; Reading (2009); Willows, N.D. (2005). Determinants of Healthy Eating in Aboriginal Peoples in Canada. Canadian Journal of Public Health 96(Supplement 3): S32-S36.
[36] Katzmarzyk, P.T. (2008). Obesity and Physical Activity among Aboriginal Canadians. Obesity 16: 184–190.
[37] Ibid.
[38] Shields, M. (2006). Overweight and Obesity among Children and Youth. Health Reports 17(3).
[39] Health Canada (2005). 2005 Progress Report on Tobacco Control. Ottawa, ON: Health Canada.
[40] _____. First Nations Inuit and Aboriginal Health: Tobacco, Ottawa, ON: Health Canada, http://www.hc-sc.gc.ca/fniah-spnia/substan/tobac-tabac/index-eng.php.
[41] Reading (2009).
[42] Health Canada (2005). Blueprint on Aboriginal Health: A 10-Year Transformative Plan. Ottawa, ON: Health Canada, http://clf2-nsi2.hc-sc.gc.ca/hcs-sss/pubs/system-regime/2005-blueprint-plan-abor-auto/index-eng.php.
[43] Crowshoe, C. (2005). Sacred Ways of Life: Traditional Knowledge. Ottawa, ON: First Nations Centre, National Aboriginal Health Organization.
[44] Ibid.
[45] Health Canada (2005). Blueprint on Aboriginal Health.
[46] Harris (1998); Daniel,M., Green, L.W., Marion, S.A., Gamble, D., Herbert, C.P., Hertzman, C., & Sheps, S.B. (1999). Effectiveness of Community-Directed Diabetes Prevention and Control in a Rural Aboriginal Population in British Columbia, Canada. Social Science and Medicine 48(1999); Heffernan et al. (1999).
[47] Harvey-Berino, J. & Rourke, R. (2003). Obesity Prevention in Preschool Native-American Children: A Pilot Study Using Home Visiting. Obesity Research 11(5): 606-611.
[48] Hunter, L.M., Logan, J., Goulet, J., & Barton, S. (2006). Aboriginal Healing: Regaining Balance and Culture. Journal of Transcultural Nursing 17(1): 13-22.
[49] Willows (2005).
[50] Kuhnlein, H.V., Receveur, O., Soueida, R., & Egeland, G. (2004). Arctic Indigenous Peoples Experience the Nutrition Transition with Changing Dietary Patterns and Obesity. The Journal of Nutrition 134: 1447-1453.
[51] Willows (2005).
[52] Egeland, G., Charbonneau-Roberts, G., Kuluguqtuq, J., Kilabuk, J., Okalik, L., Soueida, R., & Kuhnlein, H.V. (2009). Back to the Future: Using Traditional Food and Knowledge to Promote a Healty Future among Inuit. In Indigenous Peoples' Food Systems, pp. 9-22. Rome: Food and Agriculture Organization of the United Nations Centre for Indigenous Peoples' Nutrition and Environment.
[53] Harris (1998).
[54] Paradis, G., Lévesque, L., Macaulay, A.C., Cargo, M., McComber, A., Kirby, R., Receveur, O., Kishchuk, N., & Potvin, L. (2005). Impact of a Diabetes Prevention Program on Body Size, Physical Activity, and Diet among Kanien'kehá:Ka (Mohawk) Children 6 to 11 Years Old: 8-Year Results from the Kahnawake Schools Diabetes Prevention Project. Pediatrics 115: 333-339.
[55] Ho, L.S., Gittelsohn, J., Rimal, R., Treuth, M.S., Sharma, S., Resecrans, A., & Harris, S.B. (2008). An Integrated Multi-Institutional Diabetes Prevention Program Improves Knowledge and Healthy Food Acquisition in Northwestern Ontario First Nations. Health Education and Behavior 35(4): 561-573 .
[56] Venkat Narayan, K.M., Hoskin, M., Kozak, D., Kriska, A.M., Hanson, R.L., Pettitt, D.J., Nagi, D.K., Bennett, P.H. & Knowler, W.C. (1998). Randomized clinical trial of lifestyle interventions in Pima Indians: A pilot study. Diabetic Medicine 15(1): 66-72.
[57] Davis, S.M., Clay, T., Smyth, M., Gittelsohn, J., Arviso, V., Flint-Wagner, H. et al. (2003). Pathways Curriculum and Family Interventions to Promote Healthful Eating and Physical Activity in American Indian Schoolchildren. Preventive Medicine 37: S24-34.
[58] Schinke, S., Tepavac, L., & Cole, K. (2000). Preventing Substance Use among Native American Youth: Three Year Results. Addictive Behaviors 25(3): 387-397.
[59] Bartlett, J.G. (2003). Conceptions and Dimensions of Health and Well-Being for Métis Women in Manitoba. International Journal of Circumpolar Health 63(Supplement 2): 107-113.
[60] Iwasaki, Y., Bartlett, J., Gottlieb, B., & Hall, D. (2009). Leisure-Like Pursuits as an Expression of Aboriginal Cultural Strengths and Living Actions. Leisure Sciences 31(2): 158-173.
[61] Health Canada (2005). Blueprint on Aboriginal Health.
[62] Wilson, W.A. (2004). Indigenous Knowledge Recovery Is Indigenous Empowerment. American Indian Quarterly 28(3/4): 359-372.
[63] Wolsko, C., Lardon, C., Hopkins, S., & Ruppert, E. (2006). Conceptions of Wellness among the Yup'ik of the Yukon-Kuskokwim Delta: The Vitality of Social and Natural Connection. Ethnicity & Health 11(4): 345-363.
[64] Warne, D. & Lakota, O. (2005). Traditional Perspectives on Child and Family Health. Paediatrics & Child Health 10(9): 542-544.
[65] Cargo, M., Lévesque, L., Macaulay, A.C., McComber, A., Desrosiers, S., Delormier, T., & Potwin, L., with the Kahnawake Schools Diabetes Prevention Project (KSDPP) Community Advisory Board (2003). Community Governance of the Kahnawake Schools Diabetes Prevention Project, Kahnawake Territory, Mohawk Nation, Canada. Health Promotion International 18(3): 177-187.
[66] Chino, M. & DeBruyn, L. (2006). Building True Capacity: Indigenous Models for Indigenous Communities. American Journal of Public Health 96(3): 596-599.
[67] Paradis et al. (2005).
[68] Cargo et al. (2003).
[69] Heffernan et al. (1999).
[70] Wardman, D., Quantz, D., Tootoosis, J. & Khan, N. (2007). Tobacco Cessation Drug Therapy among Canada's Aboriginal People. Nicotine & Tobacco Research 9, no. 5: 607-611.
[71] Assembly of First Nations (2009).

This document is an update of the original design:

sharing knowledge · making a difference

partager les connaissances · faire une différence

ᖃᐅᔨᒃᑲᐃᖃᑎᒌᓂᖅ · ᐱᕚᓪᓕᖅᑎᑦᑎᓂᖅ

NATIONAL COLLABORATING CENTRE FOR ABORIGINAL HEALTH

CENTRE DE COLLABORATION NATIONALE DE LA SANTÉ AUTOCHTONE

FOR MORE INFORMATION:
UNIVERSITY OF NORTHERN BRITISH COLUMBIA
3333 UNIVERSITY WAY, PRINCE GEORGE, BC V2N 4Z9

1 250 960 5250
NCCAH@UNBC.CA
WWW.NCCAH-CCNSA.CA