INTRODUCTION

Background
Inuit (often referred to as “Eskimos”) are Arctic peoples living in 4 countries of the circumpolar region: the Alaska (USA), Canada, Greenland and Chukotka (Russia). In June of 1977, Mayor Eben Hopson of the North Slope Borough, Alaska, hosted the first ever Inuit Circumpolar Conference. Since then, the Inuit Circumpolar Council (ICC) has grown into a major international non-governmental organization representing approximately 155,000 Inuit of Alaska (USA), Canada, Greenland and Chukotka (Russia). ICC has offices in each of the four countries and works on issues affecting circumpolar Inuit, such as environment, human rights and health (1).

Given the prevailing differences and health issues confronting Inuit across the circumpolar region (as discussed below), Inuit health and wellness was identified as a priority for ICC action in the Utqiagvik Declaration (2) when the Inuit Circumpolar Council (ICC) held its General Assembly in Barrow in 2006. In response to the declaration, the ICC began working on the development of a Circumpolar Inuit Health Action Plan, which would identify the health issues and mechanisms in which Inuit health priorities could be advanced. As part of this initiative, ICC hosted the Circumpolar Inuit Health Summit with Inuit health experts from all 4 countries in Yellowknife on 9–10 July 2009. Participants gave presentations about the current health concerns and priorities in their respective regions and reported on good practices that could be replicated by other countries. The results and recommendations of this Summit are presented in this paper.

Health inequalities in the circumpolar Arctic
Although there have been improvements in health and survival for circumpolar Inuit in the last 100 years, several reports have shown that stark differences exist between Inuit and the respective national populations in the different countries (3,4).

For example life expectancy, one of the key indicators for health, is on average between 4.6 and 12.2 years lower for Inuit compared to the national average in the respective countries (3).
This discrepancy is greatest for Canada and Greenland, where the life expectancy for Inuit men and women is around 10 years lower than the national average (Table I).

Infant mortality rates demonstrate the same trend of significant gaps between Inuit and broader national populations. Infant mortality is greatest in Chukotka, followed by Nunavut (Canada) (Fig. 1). Here, again, Canada and Greenland have the greatest discrepancies between Inuit and national populations, with Nunavut’s infant mortality being 2.9 times higher than Canada’s national average, and Greenland’s infant mortality being 2.6 times higher compared to Denmark’s national average (3).

The gaps are particularly notable and disturbing in the case of tuberculosis (TB). In Russia, the overall national rate of TB is comparatively high to the other countries, and even exceeds the rate of the Indigenous population (Fig. 2) (3). The highest discrepancy

Table 1. Life expectancy at birth for national versus Indigenous populations in the USA (Alaska), Canada (Nunavut), Denmark (Greenland) and Russia (Chukotka) in the years 2000–2004.

|                | USA  | Alaska Natives | Canada | Nunavut | Denmark | Greenland | Russia | Chukotka |
|----------------|------|----------------|--------|---------|---------|-----------|--------|----------|
| Life expectancy | M 74.6 | M 68.1         | M 77.2 | M 66.6  | M 74.9  | M 63.7    | M 58.8 | M 53.6   |
| at birth       | F 80.0 | F 75.4         | F 82.2 | F 70.0  | F 79.6  | F 70.0    | F 72.1 | F 63.7   |

Life expectancy at birth summarizes the mortality of a population across all age groups. Data are shown for males (M) and females (F). Source: (3).

Figure 1. Infant mortality rates for national versus Indigenous populations in the USA (Alaska), Canada (Nunavut), Denmark (Greenland), Russia (Chukotka) in the years 2000–2004. Infant mortality rates are calculated as (number of deaths under 1 year of age during year X) / (number of livebirths during year X) and expressed per 1,000 livebirths. Source: (3).
between national and Indigenous TB rates can be found in Canada, where Nunavut's TB rate was roughly 20 times that of the national average in the years 2000–2004 (Fig. 2) (3). However, TB rates of almost 140 times higher have been reported for Canada in the last few years if self-identified Inuit are compared with non-indigenous Canadians (Fig. 3) (5).

Leading causes of death in the circumpolar Arctic are currently circulatory diseases and cancers. However, in regions with a high proportion of Indigenous peoples, death due to suicide and injury are prevalent (4). In Canada, the suicide rate in 2004 was 11.3 per 100,000 inhabitants (6), and rates for Inuit were estimated to be between 6 and 11 times higher compared to the national average (5). Furthermore, suicide rates in all Inuit-inhabited areas have been increasing during the last 15 years, and are the highest in the Nunavik region of northern Quebec (Fig. 4). Alarmingly, 51% of the total suicides in Inuit-inhabited areas in Canada are committed by males under the age of 25, and 14% by females in that age range (5).

Data for the other countries are scant. In Alaska, the north-west coast has the highest rates of suicides (7). The overall suicide rate in Russia was 32.2 per 100,000 in 2005 (6), and experts estimate that the rate for Native peoples in Russia is three to four times higher (8). In the early 1990s, East Greenland reached one of the highest suicide rates ever recorded with 1,500 per 100,000 in a year (7). Suicide rates have been declining since then, especially among young men in Nuuk; however, they remained constant for the rest of the west coast and are still highest for East Greenland (7).

![Tuberculosis 2000-2004](image)

**Figure 2.** Active rates of tuberculosis (TB) for national versus Indigenous populations in the USA (Alaska), Canada (Nunavut), Denmark (Greenland), and Russia (Chukotka) in the years 2000–2004. Active TB rates are calculated as (number of active cases notified in Year X) / (mean population of year X) and expressed per 100,000 persons. Source: (3).
Figure 3. Tuberculosis (TB) rates for Inuit to non-Aboriginal Canadian-born in the years 2003–2007. Source: (11).

Figure 4. Age-standardized suicide rates (cases/100,000) for the 4 Inuit regions in Canada. Source: (5).
Food security is another very important priority that all Inuit in the circumpolar region share. In 2004, studies done in some isolated communities in Arctic Canada reported high food insecurities of 40% to 83%, while overall food insecurity in non-Indigenous households was 9% (4). The Survey of Living Conditions in the Arctic (SLiCA) found that only 14% of the people surveyed in Greenland, Chukotka and Alaska were satisfied with the amount of fish and game available to them (9). The highest satisfaction rate was recorded in Alaska (40%), with very low rates in Greenland (9%) and Chukotka (6%). There were no data available from Canada.

Generally, factors that contribute to food insecurity are the high cost of food in remote communities, the cost of hunting, a limited amount of income and inadequate government support, along with other social and individual challenges (4).

An additional factor influencing food security is the so-called Arctic dilemma. The term ‘Arctic dilemma’ describes the conflict that arises from the emergence of contaminants in the traditional Inuit diet: Contaminants such as polychlorinated biphenyls (PCBs), pesticides and flame retardants that have found their way into the Arctic food web. The persistence of the contaminants has caused them to concentrate in high amounts in animals, especially in the fat or muscle tissues of predatory fish and marine mammals. Inuit, whose diet often includes high intakes of marine mammals, have been found to have these contaminants in their blood at levels exceeding international safety guidelines (4). At the same time, the traditional Inuit diet is rich in nutrients and has extremely important social and cultural values for Inuit. The Arctic dilemma further complicates the problem of nutrition transition, during which the traditional “country” diet is replaced with a more ‘Western,’ store-bought one (10). Unfortunately, the store-bought diet often consists of cheap foodstuffs that have high contents of refined carbohydrates and saturated fats but low contents of nutrients, vitamins and essential unsaturated fatty acids. Along with the more sedentary lifestyle, this diet contributes to obesity and related diseases such as diabetes and coronary heart disease.

Data availability
It is very challenging to find Inuit-specific data, since they are not being recorded by any of the circumpolar countries. Mostly, geographically separated data have to be used (for regions where the majority of inhabitants are Inuit) or data that are generated by studies or surveys specifically covering the Inuit. Results that are reported on a geographical basis can be biased, since non-Inuit populations that are recorded (for example, in Nunavut, Canada), although a small percentage overall, predominately include younger, healthy, temporary inhabitants from the South (such as teachers and health care workers). Furthermore, if national and indigenous-specific data from a given country are being compared, the national data usually includes the Indigenous population. The difference is striking in the case of TB, as shown in the example of Canada. When the overall national average was compared to Nunavut, the rate in Nunavut was about 20 times higher between 2000 and 2004 (3). However, if self-identified Inuit were compared to non-Indigenous Canadian-born, the rates for Inuit were 90 times higher in the same time frame (11). This example clearly shows that not only is it crucial to have Inuit-specific data available but also the way the data are reported is as equally important.
Summit Outcomes

Health issues and concerns

Generally, health issues are similar for Inuit in the different countries and regions, as outlined in the introduction above. However, participants stressed the underlying causes that need to be addressed.

Common problems that were mentioned by all participants include substance abuse, particularly alcohol; suicide and mental health; injury; infectious diseases, particularly sexually transmitted infections and TB; non-communicable diseases, particularly cancer, cardiovascular diseases and diabetes.

In discussions during the Summit, it became apparent that many of the common problems are only the visible outcomes of more deeply rooted issues. Participants noted in particular the severity of the loss of traditional values and traditional knowledge brought about by the assimilation policies implemented by national governments. In all of the 4 circumpolar countries, the usually nomadic living Inuit were forced to settle in villages, and Indigenous children were taken from their families to be raised and educated in residential or boarding schools. In these schools, children were frequently not allowed to speak their languages, became detached from their cultures and often experienced abuse. Many health issues surfacing today, such as substance abuse, violence, suicide and other mental health issues can be directly attributed to this loss of a traditional lifestyle and the experience of physical and/or mental abuse. The loss of the traditional lifestyle also contributes to health problems such as diabetes and cardiovascular disease, which are a result of a now more sedentary lifestyle, accompanied by the effects of the nutrition transition, as described above.

Other common factors that were mentioned by Summit participants include the impact of environmental contamination; the physical impact of climate change on communities, wildlife and the physical environment; substandard living conditions, including chronic housing shortages and overcrowding; inadequate dental hygiene; and a lack of accessibility to health care. These factors further amplify the health issues mentioned above. For example, environmental contamination can directly affect the health of Inuit, but it can also impact food choice and cause avoidance of traditional foods, which in turn may contribute to diabetes and cardiovascular disease. Climate change has effects on food security by negatively affecting wildlife and weather conditions and by increasing food spoilage and the risk of food-related illnesses (for example, the melting of traditional ice cellars that are used to store meat). Access to clean water is also expected to become more difficult with the melting of glaciers and the deterioration of clean water sources as a result of higher water temperatures and soil erosion.

The often poor and crowded living conditions contribute to higher rates of infectious diseases such as TB.

While all of the above health concerns are shared by circumpolar Inuit to varying degrees, some countries emphasized specific concerns over others. In the North Slope Borough region of Alaska, oil and gas development brings with it a host of concerns, including those related to contaminant exposure, access to subsistence resources, and economic and social challenges. For example, the influx of non-resident workers causes a strain on local services and the infrastructure, may enhance drug and alcohol problems and outbreaks of infectious diseases. It was also noted that the north-west Arctic region
has the highest rates of sudden infant death and as a result this has become a major concern. Access to clean water was mentioned as being an additional concern.

In Greenland, infectious diseases are higher when compared to Denmark and life expectancy is lower. There is an increase of obesity among elementary school children and a related increase in diabetes. Greenland still has higher levels of contaminants (e.g., PCBs and mercury) even compared to other Inuit populations (4,12). Further, the intake of traditional foods is declining considerably: while 4 to 5 years ago 75% of the overall energy intake came from imported foods and 25% from local country food, the energy intake today from country food has fallen as low as 10% (13). As well, there is serious concern about the high percentage of sexual abuse and child poverty. In a recent study, 35% of mothers said that they had been sexually abused as children (14). Another study reported that 11% of children said that they went to bed feeling hungry (15) and 9% were found to live in relative poverty (16).

In Chukotka, high emphasis was placed on health issues related to alcoholism. For example, it was estimated that 80% of trauma that occurs in the region is because of alcoholism, and death from chronic alcoholism increased 6.5 fold in men and 19 fold in women (17). The severity of health issues related to alcohol abuse are further amplified by moonshine (home-made alcohol), which leads to accidental alcohol poisoning. Currently, government programs to deal with the issue of alcohol do not exist, only short-term treatment is available, and the production and distribution of moonshine is not prosecuted. There is also a lack of health care providers. Of further concern are the high contaminant levels in the Indigenous population. In the case of Chukotka, the sources are often local, for example, hazardous chemicals that have been left in drums on the grounds of former military sites. Although there are efforts underway to clean contaminated sites, progress is slow.

For Canada, cancer was identified as a particular concern. Inuit lung cancer rates are the highest in the world and climbing (18). Lung cancer among the Inuit in Canada is most likely related to the high rates of smoking: more than half of Inuit adults smoke daily. Also noted was a concern about food security, since Inuit pay on average twice as much for food compared to people in the urban centres of the South (4). Another big challenge is the recruitment and retention of health care workers in the northern regions.

**Good practices**

Participants presented many projects that are underway in their respective countries, which provide good examples of how the health and well-being of Inuit can be improved. Some of these examples are described briefly below.

**Circumpolar**
- Arctic Winter Games (19) and World Eskimo-Indian Olympics (WEIO) (20): The Games are being held regularly to provide a circumpolar sport competition for northern athletes, and to promote the benefits of sport, culture and traditional values.

**Alaska**
- Northwest Arctic Region:
  - ASIST (Applied Suicide Intervention Skills Training): ASIST is a formal two-day training program. People are taught how to intervene in a situation where someone may be at risk of suicide. It is hoped that
the combination of traditional and formal training will reduce suicide rates in northwest Alaska.

North Slope Borough (NSB):
- Healthy Communities Initiative: The Initiative provides funding for pro-active healthy activities for all residents of the North Slope Borough (21).
- Health Impact Assessment Program: Because health impact assessments were not routinely part of environmental assessments in Alaska, the North Slope Borough started its own program in 2006. The program incorporates health impact assessments in reviewing policies and oil and gas projects to examine the potential public health effects to North Slope Borough villages.

Greenland
- May Healthy Month: Greenland celebrates May as a “healthy month.” Events and activities are organized by the Centre of Primary Health Care in Nuuk. In May 2009, 128 free events took place and drew 9,500 participants (22).
- MIPI – Documentation Centre on Children and Youth in Greenland: The Centre has been established to collect and disseminate information about the living conditions of children and youth in Greenland to ensure decision-making is based on documented knowledge (23).
- Older People for Older People (O4O): O4O is an EU Northern Periphery Programme project in which workers from partner regions across the north of Europe are assisting communities to meet the service and support needs of their older citizens. In Greenland, O4O is working with 3 communities and 4 settlements (24).

Canada
- Ilisaqsivik, Clyde River Family Centre: Ilisaqsivik is trying to achieve community wellness by providing community members a place where they can find programs and activities to promote health and develop strength (25).
- Sled dog races: Traditional sled dog races are organized in various places in northern Canada to promote the traditional way of dogsledding and to celebrate Inuit culture. Among them are the Hudson Bay Quest (26); “The Nunavut Quest” (27); the “Big Land Challenge Dog Team Race” in Labrador (28); and the “Ivakkak” race in Nunavik (29).

Russia
- During the Soviet era, mobile health units travelled into remote communities to provide health services related to treatment and to promote the prevention of diseases. Diagnostic tools even included X-ray machines. Unfortunately, with the collapse of the Soviet Union, this practice was discontinued.
- Since 2006 there has been an annual health exam for children of all ages. As well, mothers receive ultrasounds during pregnancy and prenatal checkups are provided. Newborns are seen by a specialist every month during their first year and have regular checkups thereafter.

Ways forward
Overall, it was stressed that there is a need for all levels of society to take responsibility for Inuit health and well-being.

Governments on federal, regional and municipal levels need to provide the support for
private and public initiatives and to ensure that health care is accessible and culturally appropriate. Health care providers should be of local origin, which would prevent problems with staff attrition and retention and difficulties due to differences in language and culture. Emphasis should be placed more on health promotion, instead of treatment only. It was stressed that self-determination and the empowerment of regions and communities to take charge of their own health programs are important factors in their success, in addition these would ensure that traditional values are promoted adequately.

Public institutions such as schools and health care providers should provide necessary education and health programs. Traditional values and lifestyles should be emphasized here, as well. It was noted that as a result of the previous policies of assimilation in the 4 countries, families need to be supported as they relearn and reincorporate traditional values and healthy lifestyles since much of this knowledge has been lost.

Private institutions and businesses can and should start initiatives that promote healthy lifestyles among their employees.

Communities and families have to realize that they, too, have an important role to play in educating their children to live healthy lives and to make sure traditional values and knowledges are kept alive.

Finally, there is vital need to have access to Inuit-specific data. As stated in the introduction, only limited data are available. However, in order to create culturally relevant action plans, the availability of Inuit-specific health data are crucial.

For more information on the Summit, including the full Summit Report, statement and participant list, please contact icc@inuitcircumpolar.com.

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REFERENCES

1. 2008 Annual Report, Inuit Circumpolar Council (ICC); ca. 2009 [cited 2009 Aug 24]. Available from: http://inuitcircumpolar.com/index.php?ID=433&Lang=En
2. Utqia’vik Declaration, Inuit Circumpolar Council (ICC); c 2006 [cited 2009 Aug 24]. Available from: http://inuitcircumpolar.com/index.php?auto_slide=&ID=366&Lang=En&Parent_ID=&current_slide_num
3. Young TK. Circumpolar health indicators: sources, data and maps. Circumpolar Health Supplements 2008(3):1–128.
4. AMAP. Human health assessment: human health in the Arctic. Oslo, Norway: Arctic Monitoring and Assessment Programme (AMAP); 2009. 256 pp.
5. Bobet E. Suicide in Inuit-inhabited communities. An analysis of data from Vital Statistics records and an investigation of possible explanatory variables. Unpublished Report to Indian and Northern Affairs Canada, Strategic Research and Analysis Directorate, 2008. 37 pp.
6. WHO: World Health Organization. Country reports on suicide; ca. 2009. [2009 Aug 24]. Available from: http://www.who.int/mental_health/prevention/suicide/country_reports/en/index.html

7. Hicks J. The social determinants of elevated rates of suicide among Inuit youth. Indigenous Affairs 2007;4:31–37.

8. Kozlov A, Vershubsky G, Kozlova M. Indigenous peoples of northern Russia: anthropology and health. Circumpolar Health Supplements 2007(1):1-157.

9. Poppe B, Kruse J, Duhaime L, Abryutina L. Survey of living conditions in the Arctic: The Results. Anchorage: Institute of Social and Economic Research, University of Alaska Anchorage; 2007 [cited 2009 Aug 24]. Available from: http://www.arcticlivingconditions.org/

10. Daman S, Eide WB, Kuhnlein HV. Indigenous peoples’ nutrition transition and a right to food perspective. Food Policy 2008;33(2):135–155.

11. PHAC. 2009. Centre for Infectious Disease Prevention and Control, Public Health Agency of Canada, 2009 Personal communication: Ellis E (Manager, Tuberculosis Prevention and Control, Public Health Agency of Canada, Ottawa, Ontario). Letter to: Eva Krümmel (Inuit Circumpolar Council, Canada Office, Ottawa, Ontario). 2009 July 16.

12. Mulvd H, Sloth Petersen H, Olsen J. Arctic health problems and environmental challenges in Greenland. In: Børre Ørbæk J, Kallenborn R, Tombré I, Hegseth EN, Falk-Petersen S, Hoel Alf H, editors. Arctic alpine ecosystems and people in a changing environment. Berlin: Springer; 2007. pp. 413–427.

13. Deutch B, Dyerberg J, Sloth Pedersen H, Aslund H, Hansen JC. Traditional and modern Greenlandic food: dietary composition, nutrients and contaminants. Sci Tot Environ 2007;384:106–119.

14. Christensen E, Kristensen LG, Baviskar S. Børn i Grønland - en kortlægning af 0-14-årige børns og familiers trivsel. Report Departement for Familie og Sundhed, (Department of Family and Health, Greenland Government); 2009 [cited 2009 Aug 24]. Available from: http://dk.nanoq.gl/Emner/Landsstyre/Departementer/Departement_for_socialie_anliggered/Boern_i_Groenland.aspx

15. Niclasen B, Langaard K, Kærgaard Lauersen L, Schnohr C. Sundhed på Toppen. INUSSUK/Arktsk forskningsjournal 1. Departement of Culture, Education, Research and Ecclesiastical Affairs, Greenland Government; 2007 [cited 2009 Aug 24]. Available from: http://www.peqqik.gl/Publikationer/Rapporter_og_redegørelser/Sundhed_paa_toppen.aspx

16. Nielsen SL, Schnohr CW, Wulf F. Children’s standard of living in Greenland. Summary of the report series: Parts 1, 2, and 3 with recommendations. MIPI – Documentation Centre on Children and Youth; Nuuk; 2008 [cited 2009 Aug 24]. Available from: http://en.mipi.nanoq.gl/Emner/Publications.aspx

17. Glavnoe upravlenie zdravoookhraneniya Departamenta social’noj politiki Chukotskogo avtonomnogo okru- ga. Zdorovie naseleniya i deyatel’nost uchrezhdenii zdravoookhraneniya Chukotskogo avtonomnogo okru- ga. Statistika. Anadyr: 2009.

18. Young K. Circumpolar Inuit Cancer Review Working Group. Cancer among the circumpolar Inuit, 1989–2003. II. Patterns and trends. Int J Circumpolar Health 2008;67(5):408–420.

19. Arctic Winter Games. Arctic Winter Games International Committee; 2008 [cited 2009 Aug 24]. Available from: http://www.arcticwintergames.org/

20. WEIO: World Eskimo-Indian Olympics; d 2009 [cited 2009 Aug 24]. Available from: http://www.weio.org/

21. Healthy Community Initiative, North Slope Borough; 2009 [cited 2009 Aug 24]. Available from: http://www.north-slope.org/departments/mayorsoffice/HCInitiative.php

22. Gør May Sund (May Healthy Month), 2009 [cited 2009 Aug 24]. Available from: http://www.sundmaj.gl/

23. Documentation Centre on Children and Youth (MIPI); 2008. [cited 2009 Jul 16]. Available from: http://en.mipi.nanoq.gl/

24. O4O: Older people for older people; 2009 [cited 2009 Aug 24]. Available from: http://www.o4os.eu/about-o4o.asp

25. Illisaaqivik: Family Resource Centre. Clyde River: Illisaaqivik Society c 2002-2009 [cited 2009 Aug 24]. Available from: http://www.illisaaqivik.ca/

26. Hudson Bay Quest. Churchill, Manitoba; 2009 [cited 2009 Aug 24]. Available from: http://www.wapuskdogsled.com/

27. The Nunavut Quest: Nunavut Quest Dog Team Race. Clyde River: Illisaaqivik Society 2002–2009 [cited 2009 Aug 24]. Available from: http://www.illisaaqivik.ca/eng/knowing/nunavutquest.html

28. Big Land Challenge Dog Team Race. Happy Valley-Goose Bay, Newfoundland: Big Land Challenge; 2006–2009 [cited 2009 Aug 24]. Available from: http://www.biglandchallenge.com/

29. Ivakkak Race in Nunavik. Kuujjuaq, Quebec: Makivik Corporation; 2009 [cited 2009 Aug 24]. Available from: http://www.ivakkak.com/

Eva M. Krümmel, Ph.D.
Senior Health Research Officer
Inuit Circumpolar Council, Canada Office
75 Albert Street, Suite 1001
Ottawa, ON K1P 5E7
CANADA
Email: ekruemmel@inuitcircumpolar.com