

Arctic Council Ministerial Report

April 2009

Arctic Human Health Initiative

Summary

The International Polar Year (IPY) represents a unique opportunity to focus world attention on Arctic human health and to further stimulate circumpolar cooperation on emerging Arctic human health concerns. The Arctic Human Health Initiative (AHHI) is an Arctic Council IPY initiative that aims to build and expand on existing Arctic Council and International Union for Circumpolar Health's human health research activities. The human health legacy of the IPY will be increased visibility of the human health concerns of arctic communities, revitalization of cooperative arctic human health research focused on those concerns, the development of health policies based on research findings, and the subsequent implementation of appropriate interventions, prevention and control measures at the community level.

Human health concerns and challenges that face Arctic peoples include the health impacts of ; environmental contaminants, climate change, rapidly changing social and economic parameters within communities, the changing patterns of chronic diseases, the high rates of injuries that occur in Arctic regions and the continuing health disparities that exist between indigenous and non indigenous segments of the Arctic populations

The human health activities of the Arctic Council currently reside in the Arctic Monitoring and Assessment Program's (AMAP) Human Health Assessment Group, responsible for assessments of the relationship between pollution and health, and the Sustainable Development and Utilizations Working Group (SDWG) which has a goal to advance sustainable development in the Arctic, including opportunities to protect and enhance health of the indigenous communities and other inhabitants of the Arctic.

A number other of multi-national governmental and non governmental organizations collaborate on improving the health and well being in circumpolar regions. These include: The International Union for Circumpolar Health (IUCH), the International Arctic Social Sciences Association (IASSA), the International Network of Circumpolar Health Researchers (INCHR), the Northern Dimension (ND) Partnership in Public Health and Social Wellbeing (NDPHS), Barents Euro Arctic Council and the Co-operation Program on Health and Related Issues in the Barents Euro Arctic Region (BEAC), and the Northern Forum (NF).

It will be important for human health programs within the Arctic Council to develop linkages with other health organizations to ensure synergy between programs and avoidance of duplication of effort in specific program areas.

The IPY presents an opportunity to advance the circumpolar human health research agenda of the Arctic Council. The Arctic Human Health Initiative (AHHI) was submitted to the IPY International Program Office as an Arctic Council, US lead SDWG IPY coordinating project that aimed to serve as a focal point for human health research, education, outreach, and communication activities during IPY (2007-2009). The overall goal of the AHHI is to: *“Increase awareness and visibility of human health concerns of Arctic peoples, foster human health research, and promote health strategies that will improve health and well being of all Arctic residents”*. Proposed activities included: **expanding research networks** that will enhance surveillance and monitoring of health issues of concern to Arctic peoples, and increase collaboration and coordination of human health research; **fostering research** that will examine the health impact of, anthropogenic pollution, rapid modernization and economic development, climate variability, infectious and chronic diseases, intentional and unintentional injuries; **promoting education outreach and communication** that will focus public and political attention on Arctic health issues, using a variety of publications, printed and electronic reports from scientific conferences, symposia, and workshops targeting researchers, students, communities, and policy makers; **promoting the translation of research into health policy, community action including implementation of prevention strategies and health promotion**; and **promoting synergy and strategic direction of Arctic human health research and health promotion**.

AHHI is coordinated by an international steering committee with representation from scientists from the IUCH, and the working groups and permanent participants of the Arctic Council. The role of the steering committee is to provide the general oversight management, organization, coordination and communication of IPY AHHI projects and activities. As of March 31, 2009, 21 Expressions of Interest (EoI), 10 Full Proposals (FP), and 10 National IPY Initiatives were submitted to AHHI as potential IPY human health projects. Of these 18 EoI's 6 FP's and all 4 National Initiatives have developed into active IPY human health projects that will continue beyond the IPY.

An accomplishment of the IPY has been the creation within the SDWG of a Human Health Expert Group to help guide and monitor the expanded human health agenda of the SDWG. It is anticipated that the HHEG will continue to monitor AHHI projects through 2009-2010.

Background

The International Polar Year

The International Polar Year (IPY) is an intensive one year multidisciplinary program of collaborative international science, research, education and communication focusing on the Arctic and Antarctic regions. The years 2007-2008 mark the 50th anniversary of the International Geophysical Year and the third IPY. This event has been designated the 4th IPY by the National Academy of Science, International Council of Science, the World Meteorological Organization, the Arctic Council and many other international organizations. This period of focused scientific activity promises to “further our understanding of the physical and social process in polar regions, examine their globally connected role in the climate system and establish research infrastructure for the future, and serve to attract and develop a new generation of scientists and engineers with the versatility to tackle complex global issues” www.ipy.org .

The Arctic Council formally recognized the International Polar Year 2007-2008 as a unique opportunity to further stimulate cooperation and coordination on Arctic research and increase awareness and visibility of the Arctic region in the *Reykjavik Declaration-2004* (1). Subsequently the Ministers encouraged the expansion of IPY projects to include the human dimension, the inclusion of Arctic residents, and indigenous peoples in IPY the planning and conduct of research activities, the strengthening of monitoring and research efforts to address Arctic change and the creation of a circumpolar Arctic observing network of monitoring stations with coordinated data collection and information exchange for data analysis as a lasting legacy of the IPY. (*Salekhard Declaration-2006*) (2).

Human health has not been a research theme for any previous polar year, and thus the IPY provided an opportunity for the Arctic Council to take a leadership role by supporting research activities that will address the human health concerns of Arctic communities and set the stage for an integrated approach to Arctic human health research beyond 2009.

Human Health in the Arctic

Life expectancy in arctic populations has greatly improved over the last 50 years. In 1950, the life expectancy for an Alaska Native, the indigenous people of Alaska, at birth was 47 years compared with 66 years for the general U.S. population. By 2000, the life expectancy for Alaska Natives had increased to 69.5 years, a gain of over 20 years. Much of this improvement can be attributed to implementation of prevention and treatment activities that have resulted in reductions in morbidity and mortality from infectious diseases, such as tuberculosis, and the vaccine preventable diseases of childhood. Reductions in infectious disease mortality for Alaska Natives have been especially dramatic. In 1950, 47% of deaths among Alaska Natives were due to infections, as compared with only 3% for non-Native Alaskans. By 1990, infectious diseases caused only 1.2% of the Alaska Native deaths, very similar to the 1% seen for non-Natives (3). In addition public health research led to innovations including the provision of safe water

supplies, sewage disposal, development of community based medical providers, contributing to improved care and access to care for injuries and illness. Research on the negative health effects of tobacco has led to tobacco cessation and education programs. Mortality rates for heart disease and overall cancer rates are similar in arctic indigenous residents in relation to overall rates for the US, Canada, and northern European countries, with some exceptions (ie higher incidence of gastric, nasopharyngeal, renal cancers) not explained by known risk factors (4) .

Despite these improvements in these health indicators of arctic residents, life expectancy is shorter and infant mortality rates are higher among indigenous arctic residents in the US Arctic, northern Canada, and Greenland than among other Arctic residents of Nordic countries. For example, life expectancy for Alaska Natives still lags behind the general U.S population which was 76.5 years in 2000. Similarly, indigenous residents of US Arctic and Greenland have higher mortality rates for injury and suicide and hospitalization rates for infants with pneumonia and respiratory infections; these disturbing health disparities will only be solved with greater understanding of their causes through research and focused efforts at prevention (5).

The rapid pace of change across the Arctic present new challenges to the health and wellbeing of Arctic residents will require additional health research. Some of the major trends likely to affect the health status of Arctic peoples include economic changes, improved transportation and communications, environmental pollutants and climate change.

Living conditions are changing from an economy based on subsistence hunting and gathering to a cash-based economy. Across the circumpolar north there is increasing activity towards sustainable development via local resource development and widening involvement in the global economy. The influence of such changes on the physical health of arctic residents on the one hand have been positive, resulting in improved housing conditions, a more stable supply of food, increased access to more western goods, and decreases in morbidity and mortality from infectious diseases. But changes in lifestyle brought on by the move away from traditional subsistence hunting and gathering and the societal changes brought on by modernization, in general, have resulted in an increase in prevalence of chronic diseases such as diabetes, hypertension, obesity and cardiovascular diseases. In addition, it is well known that child abuse, alcohol abuse, drug abuse, domestic violence, suicide, unintentional injury is also connected to rapid cultural change, loss of cultural identity and self esteem (6,7).

Globalization has meant improvements in the transportation infrastructure and communications technologies such as the internet and telemedicine innovations. Many communities once isolated, are now linked to major cities by air transportation, and are only one airplane ride away from more densely populated urban centers. Consequently these communities are now vulnerable to the importation of new and emerging infectious diseases (such as influenza, SARS or SARS like infectious diseases, and antibiotic-resistant pathogens such as multi-drug resistant tuberculosis) (8).

Environmental contaminants are a global problem. Contaminants such as mercury, other heavy metals, PCBs, DDT, dioxins and other organochlorines, mainly originate in the mid-latitude industrial and agricultural areas of the globe but have migrated to the Arctic via atmospheric, river and ocean transport. Their subsequent bio-magnification in the Arctic food webs and appearance in subsistence foods such as fish, waterfowl, marine and land mammals, and the indigenous people who rely on these foods is of great concern to Arctic residents. Potential human health effects include damage to the developing brain, endocrine and immune system. A new concern is the role of mercury on cardiovascular diseases. Research is needed to identify the levels and human health effects of these contaminants in arctic residents, particularly the very young, and to use research to provide guidance on both the risks and benefits of consuming traditional foods (9).

The changing climate is affecting Arctic communities, and is bringing economic and health threats, as well as possible opportunities. The impacts of climate change on the health of arctic residents will vary depending on factors such as age, socioeconomic status, lifestyle, culture, location and capacity of the local health infrastructure systems to adapt. It is likely that the most vulnerable will be those living a traditional lifestyle close to the land in remote communities, and those already facing health related changes. Direct health related impacts, for example may include an increase in injuries, hypothermia, and frostbite related to travel, unpredictable ice and weather conditions, and heat stress in summer. Indirect impacts include the potential changes in vector borne diseases such as West Nile virus, zoonotic infectious diseases such as brucellosis, tularemia or echinococcosis, changes in access to safe water supplies, failure of the permafrost and damages to the sanitation infrastructure, and changes in the traditional food supply as the migration patterns of subsistence species change in response to changing habitats. Research is needed to identify climate sensitive indicators that will allow the prediction of health impacts and the development of mitigation strategies (10, 11).

While these challenges seem great, the Arctic is unique in many aspects. It can be defined by population, a population that is sparsely scattered over a very large geographical area, by climate and latitude, by seasonal extremes of temperature, light and dark, and by its spirit and history of cross border cooperation on issues of concern to Arctic communities.

Circumpolar Cooperation on Arctic Human Health

There is a long history of international cooperation on many issues affecting arctic communities including human health and human health research.

The International Union for Circumpolar Health (IUCH) (www.iuch.net) is an organization comprised of the memberships of the American Society for Circumpolar Health, the Canadian Society for Circumpolar Health, the Nordic Society for Arctic Medicine, the Siberian Branch of the Russian Academy of Medical Sciences and the Danish/Greenlandic Society for Circumpolar Health. The IUCH promotes international cooperation, research, scientific information exchange and education in the areas of Arctic health policy, birth defects & genetics, cancer, diet & heart, environmental health

& subsistence food security, family health, fetal alcohol syndrome, health surveys, HIV/AIDS, STDs, indigenous peoples health, infectious diseases, injury prevention, occupational safety & health, population-based planning, tobacco & health, and women's health. Outreach and communication are provided through the publication of the International Journal of Circumpolar Health, and the hosting of the triennial International Congress on Circumpolar Health (ICCH), the next to be held in Yellowknife July 12-16, 2009.

The International Arctic Social Sciences Association (IASSA) draws membership from disciplines relating to behavioral, psychological, cultural, anthropological, archaeological, linguistic, historical, social, legal, economic, environmental, and political subjects, as well as health, education, the arts and humanities, and related subjects. IASSA promotes international cooperation and increased participation of social scientists in national and international Arctic research. The organization also promotes communication and coordination with other research organizations and facilitates the active collection, exchange, dissemination, and archiving of scientific information in the Arctic social sciences (www.iassa.gl)

The Northern Dimension Partnership in Public Health and Social Wellbeing (NDPHS) has a membership of 13 countries- Canada, Denmark, Estonia, Finland, France Germany Iceland, Latvia, Lithuania, Poland Russia Sweden. NDPHS promotes sustainable development in the Northern Dimension area through improving human health and social wellbeing through intensified cooperation and enhanced coordination. Priority areas include: 1) the reduction of major communicable and non communicable diseases (including HIV/AIDS and tuberculosis, use of illicit drugs, cardiovascular diseases and consequence of socially distressing conditions), and 2) the promotion of health lifestyle and socially rewarding lifestyles. (www.ndphs.org)

Cooperation program on health and related issues in the Barents Euro Arctic Region was established in 2003 by the Barents Euro Arctic Council. This has both national and regional representation from Norway (Nordland, Tromso, Finmark), Sweden (Vasterbotten, Norrbotten), Finland (Lapland, Oulu, Kainuu) and the Russian Federation (Murmansk, Karelia, Archangelsk, Komi, Nenets). Priorities include the prevention of communicable diseases, prevention of lifestyle and related health and social problems, and promotion of health lifestyles, development and integration of primary health care services. (www.barentshealth.org)

The Northern Forum is a non profit organization of regional or sub-regional governments of northern countries. The Northern Forum fosters communication and cooperation among northern regions providing avenues for discussion training and cooperative ventures. Health priorities include a focus on promoting healthy lifestyles and using technology such as telemedicine to improve health care. Other projects include mitigating substance abuse, through training of professionals in improved treatment protocols, promoting infectious disease monitoring, and promoting healthy lifestyles in the north. (www.northernforum.org)

Human Health and the Arctic Council

The Arctic Council, established in 1996 is a ministerial intergovernmental forum which promotes cooperation, coordination and interaction between among 8 Arctic States including indigenous communities and other Arctic Residents on issues relating to sustainable development and environmental protection. (www.arctic-council.org). Human health activities of the Arctic Council currently reside in the Arctic Monitoring and Assessment Program's Human Health Assessment Group and in the Sustainable Development Working Group (AMAP HHAG). While the role of the AMAP HHAG has been to conduct periodic assessments of the impact of environmental contaminants on human health, the role of the SDWG in human health has been less defined. However since the establishment of the Arctic Council in 1996, the SDWG has undertaken several activities intended to improve certain aspects of the health of Arctic Residents.

The Survey of Living Conditions in the Arctic (SLiCA) is an ongoing project founded in 1998, and led by researchers in Greenland and Denmark and is an interdisciplinary and international project designed to develop a new research design for the measurement of living conditions and individual well being among the Inuit and Saami peoples of the Arctic.

In 1998 the ministers endorsed the Canadian led "Future of Children and Youth in the Arctic Initiative". The goals of this project were to improve the health and well being of children and youth in the Arctic and to better prepare them for a future by increasing knowledge and understanding of sustainable development in the Arctic.

The Telemedicine Project, lead by the US was designed to share information among the Arctic Council members about programmatic successes and lessons learned from national and international experiences in remote health care delivery, training and education.

The International Circumpolar Surveillance (ICS) system for emerging infectious diseases, endorsed by the ministers in 2000, (*Barrow Declaration-2000*) (12), established a network of hospital and public health laboratories throughout the Arctic. This network allows the sharing of standardized laboratory information and epidemiologic data between Arctic countries to facilitate tracking of infectious diseases of concern, the emerging problems of antimicrobial resistance, and the formulation and implementation of prevention and control strategies.

The Arctic Human Health Initiative

With the recognition by the Arctic Council that the IPY represented a unique opportunity to stimulate cooperation and coordination on Arctic research and on human health, an Expression of Interest (EoI) outlining potential human health research activities to be conducted during the IPY was submitted to the IPY Joint Committee January 14, 2005 (EoI # 914). This was followed by the development and submission of the Arctic Human Health Initiative (AHHI) as a Full Proposal September 30, 2005 (FP # 167). This proposal was subsequently endorsed by the IPY Joint Committee as an IPY coordinating project for human health.

The aim of AHHI is to use the IPY to: *“Increase the awareness and visibility of human health concerns of arctic peoples, foster human health research, and promote health strategies that will improve health and well being of all Arctic residents”*.

The IPY can be used to create new or expand existing health networks, for the purpose of sharing standardized information between communities, regions or Arctic countries and promote international collaboration on health research, outreach, education and communication in the areas of health disparities, the health effects of environmental pollution, rapid social & economic change and climate change.

The IPY can be used for developing a strategic direction for Arctic Council human health research and health promotion activities and promoting synergy between organizations conducting human health activities in the Arctic.

AHHI project priorities and project criteria were developed through meetings of an AHHI International Advisory Committee which met in Copenhagen Denmark April 7th, and in Quebec City, Quebec, Canada October 25th 2005. In addition the 13th triennial IUCH ICCH (June 12-15, 2006 in Novosibirsk, Russian Federation) served as the “Gateway to IPY” for the circumpolar health community. This congress brought together circumpolar health care professionals, workers, researchers, policy makers and indigenous community members. The meeting presented a forum for discussion on their respective visions and priorities for human health activities for the IPY and beyond. These discussions resulted in recommendations that emphasized the role of communities in research planning, research activities and the translation of research findings into actions that would benefit the health and wellbeing of Arctic communities.

Scientists interested in Arctic Human Health, and IPY research, were encouraged to submit Expressions of Interest (EoI), or Full Proposals (FP) using the IPY proposal submission process. www.ipy.org The criteria for human health proposals are found in Table 1.

As of March 31, 2009, 21 EoI’s , and 10 FP’s were submitted as projects under the AHHI. Of these 18 EoI’s and 6 FP have developed into active IPY human health projects. These are summarized below. Details of each project can be found at www.ipy.org searching the project data base using the EoI or FP number. In addition there are 4 “National Initiatives” submitted to the AHHI as IPY human health projects but were not registered with the IPY International Program Office. These are also summarized below, and details can be found at the AHHI website.

AHHI is coordinated by an international steering committee with representation from scientists from International Union for Circumpolar Health, and the human health working groups, and permanent participants of the Arctic Council. The role of the steering committee is to provide the general management, organization, coordination and communication of IPY AHHI projects and activities. A secretariat was established at the University of Alaska Anchorage, and maintains the AHHI website at

www.arctichealth.org. This is a central repository for all AHHI activities. AHHI has been funded in part by the CDC's Arctic Investigations Program, the U.S. Department of State's Bureau of Oceans, and International Environmental and Scientific Affairs, and the University of Alaska.

Projects

Expansion of Networks

The establishment of well coordinated and Sustained Arctic Observing Networks (SAON) is a major objective of the IPY (www.arcticobserving.org). The goal is to develop long term Arctic wide observing activities that provide free, open and timely access to high quality data for both the scientific and societal communities. In 2006 the Arctic Council Ministers requested that the AMAP together with other AC working groups and external partners create a coordinated Arctic Observing System to monitor Arctic Change (Salekhard Declaration 2006)(2).

Several human health monitoring networks already exist and could form the basis for the establishment of a circumpolar health observatory which could provide: 1) an international circumpolar collaborative health information system, 2) systematic standardized, consistent methods in data collection, analysis, and reporting, 3) ability to monitor trends and patterns in health status, health determinants and health care, 4) quantitative evidence for planning and evaluation of health programs and services, 5) a system that is population based and aggregated by administrative regions in all circumpolar countries.

Existing networks that could provide the basis for a circumpolar health observatory include:

1. International Circumpolar Surveillance

Lead Country(s): USA

(EoI # 1150)

The purpose of the International Circumpolar Surveillance (ICS) system for infectious diseases is to establish a surveillance network of hospital and public health laboratories throughout the Arctic. The network allows the collection and sharing of uniform laboratory and epidemiologic data between Arctic countries that defines the prevalence of infectious diseases of concern to Arctic residents and assists in the formulation of prevention and control strategies. Currently the system monitors invasive bacterial diseases and tuberculosis in the US Arctic (Alaska), northern Canada, Greenland, Iceland Norway, Finland, northern Sweden. Expansion of ICS to include northern regions of the Russian Federation is anticipated in 2009. While currently focused on prevention and control of infectious disease the system could be adapted to monitor other human health issues of concern in Arctic countries, and serves as a model for a Sustainable Arctic Observing Network for human health.

**2. Arctic Monitoring and Assessment Program
Human Health Assessment Group Conference.**

Lead Country(s) Canada/Denmark

(FP # 145)

The Arctic Monitoring and Assessment Program (AMAP) has been coordinating circumpolar monitoring and assessment of atmospheric pathways, biota impacts, food chain dynamics and human health issues for environmental contaminants since 1991 (<http://www.amap.no/>). The contaminants have included persistent organic pollutants (POP's-both historic and emerging compounds), metals and radionuclides of concern in the circumpolar world. The AMAP Human Health Assessment Group (HHAG) has members in all eight circumpolar countries and has completed two assessments on the human health impacts of arctic environmental contaminants (1996, 2002). A third assessment is to be released in 2009. These assessments include human monitoring data, dietary studies, health effects studies and risk management strategies to mitigate the effects of contaminants. The HHAG has effectively functioned as an Arctic Observing Network for environmental contaminants in the circumpolar north and could work with the other human health observation networks to give an integrated picture of circumpolar human health.

3. International Network of Circumpolar Health Researchers

Lead Country(s): Canada

(EoI # 516)

The International Network of Circumpolar Researchers (INCHR) is a voluntary network of individual researchers, research trainees, and supporters of research based in academic research centers, Indigenous people's organizations, regional health authorities, scientific/professional associations, and government agencies, who share the goal of improving the health of the residents of the circumpolar regions through international cooperation in scientific research. The goals of INCHR are: 1). Conduct, sponsor, and promote research programs and projects investigating the patterns, determinants and impact of health conditions among circumpolar peoples and the strategies for improving their health; 2). Support research training at all levels and increase capacity for circumpolar health research in communities, service delivery agencies and higher educational institutions; 3). Facilitate exchange, communication and dissemination of research data; 4). Strengthen the health information system in the circumpolar region. (www.inchr.org)

4. Arctic Health Research Network.

(FP# 449)

Lead Country(s) Canada

The Arctic Health Research Network is a health research network based in the three northern territories and a provincial region of Canada. The network has four sites in Yukon, Northwest Territories, Nunavut and Labrador. Each is registered under territorial societies act and are governed by a board of directors. The

network's vision is to build on the strengths and knowledge of all cultures to achieve health in the territory.

The network fosters partnerships for the development of northern health knowledge through research, facilitation and training. The AHRN supports activities which build sustainable health research infrastructure in the north as well as engage northern partners in health research projects. The network is engaged in a broad spectrum of research projects and activities including community based participatory projects around climate change, suicide prevention and food security, territory wide research projects including HPV prevalence, surveillance development, knowledge translation, enhancing research capacity in territorial organizations through research methods workshops, proposal writing workshops and services as well as the training and support of graduate students. Specific activities and events for each region can be found at the website. www.arctichealth.ca

5. Survey of Living Conditions in the Arctic-Remote Access

Lead Country(s): Denmark

(FP # 190)

Initiated in 1998, the first phase of this project developed a standardized research design for the measurement of living conditions and well-being among the Inuit, Saami, and indigenous peoples of Chukotka. The survey was completed in 2006. During the IPY SLiCA will expand the understanding of Arctic change by extending the concepts of remote access analysis to the SLiCA international data base, allowing other researchers to remotely conduct analysis without access to raw data. www.arcticlivingconditions.org

There are several other human health and social indicator networks that are operational and will increase our research capacity and to address social realities of the arctic. They all aim to encourage data sharing and use.

The Arctic Social Indicators (ASI) is a follow-up project to the Arctic Human Development Report (13). This project, which is currently on-going, will take advantage of existing data to create relevant indicators, and will recommend a set of new and relevant indicators. ASI will develop indicators in six domains: ability to guide one's destiny, cultural integrity, contact with nature, education, health and demography, and material well-being. The Arctic Observation Network Social Indicators Project (AON-SIP) is compiling data using a common framework, geography, time, and variables. There are five clusters of indicators: community living conditions (organized within the six ASI domains), tourism, fisheries, oil, gas, mining and marine transportation, and marine mammal hunting (www.search-hd.net). ArcticStat is a portal database that allows the user to select and reach existing tables that cover Arctic countries and regions, some ten socio-economic indicators and more sub-indicators, and years (www.arcticstat.org). Thousands of tables mainly from national agencies are linked to ArcticStat. All of the above projects are attempting to integrate their data.

Significant difficulties are presented in the use of existing data due to a lack of uniformity between existing data sets (between two countries for instance) and barriers to access the data (tables not accessible at the regional level, or in English language, or excessive charges). Moreover no researchers / agencies have ongoing funding for these important determinants and in some countries there is no funding for even basic database operation.

Research Projects

Research is needed to address human health concerns and challenges that face Arctic peoples. These concerns include: the health impacts of environmental contaminants, climate change, rapidly changing social and economic parameters within communities, the changing patterns of chronic diseases, the high rates of injuries that occur in Arctic regions and the continuing health disparities that exist between indigenous and non indigenous segments of the Arctic populations. Research projects include:

6. The Inuit Diet and Health Study/Inuit Health in Transition

Lead Country(s): Canada/Denmark

(FP # 253)

This survey on social and cultural factors in a large cohort of Inuit in Alaska, Canada, and Greenland focuses on diet and other lifestyle factors known effect chronic disease status, such as smoking, contaminant exposure, and physical exercise. This large project will give a cross-sectional description of the associations between environment, living conditions, lifestyle risk factors and existing disease status among these populations. (www.arcticnet.ulaval.ca).

7. Genetics and Environmental Risk Factors for Complex Diseases: A study of the Saami population

Lead Country(s): Sweden

(EoI # 1274)

This study evaluates a northern Swedish population with known demographic and environmental exposures to identify genetic and environmental factors that contribute to health status. Cross-population comparisons are used to study genetic and environmental risk factors among populations with widely differing origins and environments.

8. Center for Alaska Native Health Research

Lead Country(s): US

National Initiative

The Center for Alaska Native Health Research (CANHR) was established in 2001 at the University of Alaska Fairbanks (<http://canhr.uaf.edu/>). CANHR's overall goal is to achieve a permanent and sustainable research center at the University of Alaska Fairbanks with the primary theme of investigating obesity and chronic disease-related risk and protective factors. CANHR is developing unique

biomedical knowledge and translating it into research for the prevention and reduction of health disparities among Alaska Natives. The objectives of the Center are to build a collaborative research presence in Alaska Native communities focusing on:

- Prevention and reduction of health disparities: CANHR seeks new knowledge through basic and applied research that can ultimately be applied to understand, prevent and reduce health disparities in indigenous communities.
- Cultural processes awareness: The center's researchers study how cultural variables influence the understanding of disease expression in Alaska Natives so that research findings and intervention are valid and culturally appropriate.
- Community-based participatory research methods: CANHR researchers work closely with and take significant direction from indigenous communities. Tribal community

**9. Public Health in Russian Arctic: Analytic Review for Russian Program of International Polar Year 200702008 (RAHR-Russian Arctic Health Review).
Lead Country(s): Russian Federation
(EoI# 1139)**

The goal of this project is to assess the main processes which determine the conditions of life and health of people living in high latitude territories of the Russian Federation, and to compare the main health indicators of indigenous, non indigenous and non Russian Arctic populations of Europe, Canada and USA.

**10. The Siberian Birth Outcomes Study (SIBOS)
Lead Country(s): Russian Federation
(EoI # 1122)**

The objective of this study are to: (1) to create a database of births in Siberia which will allow epidemiological study of a variety of pregnancy outcomes in relation to month and season of birth, latitude and climate/climate change, known areas and risks for environmental toxicants and other potential reproductive hazards, duration of exposure to potential demographic risks, ethnicity (including aboriginal peoples), and exposure to known reproductive toxicants such as alcohol and tobacco; (2) to determine Siberia-specific risk factors for adverse pregnancy outcomes; (3) to test hypotheses of early influences at the time of conception and birth on subsequent health indices; and (4) to compare the Siberian data with those of Norway and North Canada.

11. Does Exposure to Persistent Organic Pollutants (POPs) increase the risk of breast cancer?

Lead Country(s): Denmark

(EoI # 1257)

Few studies of breast cancer and POPs exposure have been conducted in Arctic populations. The aim of this project is to undertake an epidemiological investigation of the risk of breast cancer in relation to exposure to POPs among Greenlandic women. The study will collect data on diet, fatty acid biomarkers, trace elements, genotyping and xenobiotic serum activities.

12. An Epidemiological Study of the Cumulative Health Effects of Persistent Organic Pollutants and Mercury in Subsistence Dependent Rural Alaska Natives.

Lead Country(s): USA

National Initiative

This study will examine POP's and mercury levels in salmon, and marine mammal tissue, and the blood of resident mothers and infants from western Alaska to determine if climate change is increasing the levels of these contaminants in the environment. If climate change is associated with rising salmon and human levels of POP's and mercury it would provide data to further support reduction of POP's and mercury production and release, and efforts to reduce global warming.

13. Arctic Community-Based Environmental Monitoring, Observation and Information Stations Phase 1: Bering Sea Sub-Network

Lead Country(s): USA

(FP # 247)

The goal of this project is to increase scientific knowledge that has significance for understanding of pan-Arctic processes and enhance the ability of scientists, Arctic communities and governments to predict, plan and respond to environmental change. Six indigenous communities in Alaska and north eastern Russia will gather environmental observations on the primary subsistence and commercial species of the Bering Sea. Information will be gathered on changes in climate and environmental conditions, the abundance and quality of the resource, change in migration patterns and habitat, the effect of changes on the availability of the resource, food supply and health and livelihood of the community.

(www.bssn.net)

14. The burden of Infectious Diseases in Greenland-means of evaluation and reduction

Lead Country(s): Denmark

(EoI #1107)

This project will address the burden of infectious diseases in Greenland by establishing research programs to evaluate long-term consequences of certain infectious diseases, to evaluate the use of routine surveillance data, to initiate

intervention trials in order to prevent infectious diseases, and to establish cooperation with organizations in other countries.

15. Hepatitis B in aboriginal Populations in the Arctic: Alaska Natives, Canadian Inuit, First Nations Peoples, Greenland Inuit and Russian Native Populations.

Lead Country(s): USA

(EoI# 1109)

The goals of this project are to: determine the epidemiology of chronic HBV in Aboriginal populations, monitor patients to determine disease progression, examine demographic characteristics associated with disease outcome, examine environmental factors associated with disease outcome, including contaminants in the environment and subsistence foods, examine cofactors such as alcohol intake, obesity and metabolic syndrome, examine viral characteristics such as genotype, and viral loads and mutations that could affect disease outcome. This study will allow the identification of barriers to treatment, potential treatment candidates, monitoring of treatment outcome and the examination of the role of factors such as demographics, viral genotype, and environmental factors in treatment outcome.

16. Sexual Health and Sexually Transmitted Infections in Northern Frontier Populations.

Lead Country(s): Canada

(EoI #1147)

The objective of this project is to build capacity to examine individual, social and environmental factors that influence perceptions of sexual health and sexually transmitted infections. The approach will be community based participatory research. The aims include a description of the basic epidemiology of STIs, pregnancy, and pregnancy outcomes, and to identify communities at risk and targets for capacity building and interventions

17. Engaging Communities in the Monitoring of Zoonoses, Country Food Safety and Wildlife Health

Lead Country(s): Canada

(FP #186)

Food borne parasites such as *Trichinella*, *Toxoplasma* and *Anisakis* are significant Arctic zoonoses endemic in some regions and directly related to consumption of country food. The objectives of this proposal are to: 1) document the distribution and abundance of *Trichinella nativa*, *Toxoplasma gondii* and *Anisakis simplex* in Arctic/subarctic wildlife, 2) develop community based capacity for ongoing detection and monitoring of these pathogens and 3) facilitate the collection of wildlife samples from other researchers.

18. Evaluation of the impact of an immunization program combining pneumococcal conjugated vaccine and inactivated influenza vaccine in Nunavik children, Province of Quebec, Canada

Lead Country(s): Canada

EoI# 1119

In the Nunavik region in the province of Quebec, hospitalizations for pneumonia are much more frequent than in the general population of Quebec and it is estimated that a quarter of children present hearing deficit by the age of 5 years. In the spring of 2002, a routine infant immunization program with the 7-valent pneumococcal conjugate vaccine (PCV-7) was implemented along with a catch-up for children younger than 5 years of age. In the fall of 2003, the trivalent inactivated influenza vaccine (TIV-3) was offered to all 6 to 23 months old children. The objective of the study is to evaluate the impact of this double immunization program in young Inuit children, and to study for the first time the ability of the PCV-7 combined with the TIV-3 to prevent respiratory infections and audiological sequelae due to otitis media.

19. Prevalence of Human Papillomavirus Infection and Cervical Dysplasia in the North West Territories

Lead Country(s): Canada

(EoI # 1121)

In Canada, the high incidence and mortality rate of cervical cancer in Aboriginal populations of the Northwest Territories (NWT) has led to concerns about current screening methods. Recent reports in the literature have indicated that the Pap test is a less than ideal tool for screening for cancer of the cervix and this has generated interest in the potential for incorporating Human Papillomavirus (HPV) DNA testing into the present screening program. There is currently not a lot of information on the prevalence of HPV infection in the NWT which has the greatest number of Aboriginal communities in Canada. The objectives of the study are to: 1) Determine the prevalence of type specific oncogenic HPV infection and cervical dysplasia (precursor lesion) in women of the NWT, 2) Explore the association between type specific oncogenic HPV infection and cervical dysplasia in Northern Canada and its sub-populations, 3) Identify the sub-types of HPV infection associated with cervical dysplasias in the sub-populations of the NWT, and 4) Provide scientific evidence for policy makers and local public health workers in NWT to plan and implement more effective cancer control programs. Women over the age of 15 in the NWT who attend routine clinics for Pap smears will be invited to participate in this cross-sectional study.

20. Health and social condition of adoptees in Greenland - a comparative register and population based field study. Creation of an "adoptees-database"

Lead Country(s): Denmark

(EoI # 1202)

Greenland has a huge number of adoptees and the number of children placed at institution is large. The study will explore how adoption and collective care have an impact on well being, family health and social conditions. Adoption is closely linked to social organization, identity, cultural openness and collective consciousness, this study will identify settings in which adoption is linked to child neglect and lack of care. The study will also explore parents' and care givers' control and coping strategies.

21. Healthy Lifestyle Projects

Lead Country(s): US/Russian Federation

(EoI # 1271)

Human development of the Arctic and subarctic regions, such as Alaska, Russia, Canada and other northern nations, has resulted in significant changes in the health and well being of its indigenous peoples as well as “newcomers” to the north. Emerging health problems include suicide, an increase in the incidence of diseases such as diabetes and cancer, and substance abuse. The activities under this project will provide information exchange and training opportunities to advance care and treatment of Arctic residents with mental health issues.

22. Negotiating Pathways to Adulthood: Social Change and Indigenous Culture in Four Circumpolar Communities

Lead Country(s): US

(EoI #1266)

Contemporary dynamics of rapid social change have dramatically affected the political, cultural, and economic systems of circumpolar Indigenous people. The Pathways study is a comparative, collaborative, and participatory circumpolar research project. Its aims are to explore responses to rapid social transition through the life experiences of circumpolar youth. The proposed study will examine 80 youth life history narratives. These narratives will come from one of each Alaska Inupiat, Alaska Yup'ik, Canadian Inuit, and Siberian Eveny community. In addition, the research team is developing collaborations using additional funding sources to examine the narratives of an additional 40 youth from a Norwegian Saami and Greenlandic community. In this study, the team intends to identify shared and divergent stressors and patterns of resilience in the transition to adulthood across these different circumpolar settings.

23. Mental and Behavioral Health Issues in the U.S. Arctic

Lead Country(s): US

National Initiative

This study will examine the science base, gaps in knowledge, and strategies for the prevention and treatment of mental and behavioral health problems faced by populations in Arctic regions, with a focus on Alaska. Specifically, the project will:

- Summarize the scope and nature of mental and behavioral health problems among residents of Arctic regions, with special emphasis on Alaska and Alaska Natives.
- Assess the infrastructure for research into the mental and behavioral health issues in Alaska to determine if current mechanisms and resources are appropriate to facilitate progress in the field. This should include analysis of which federal agencies are funding research programs and the mechanisms used.
- Describe factors that contribute to promoting resilience and recovery in Northern residents and provide recommendations for strategies that will increase resilience in the affected populations and reduce health disparities.
- Describe and assess the infrastructure for prevention and treatment of mental and behavioral health in Alaska; including federal, state and community based programs. This should include examination of collaborative efforts and discussion of ways to improve coordination between the multiple public and private agencies involved in promoting improved mental and behavioral health.
- Identify steps that could be taken in the short-, medium-, and long-term to improve the mental and behavioral health of northern US residents, including research needed to understand the impact of Arctic climates and rapid social change on mental and behavioral health, improvements in community infrastructure directly related to health, changes in prevention and treatment programs, and mechanisms to improve training for mental and behavioral health care services.

Outreach, Education, and Communication Projects

An important aspect of the AHHI is promotion of education outreach and communication which will: focus public and political attention on Arctic Health issues; increase dialogue between researchers, policy makers and communities; increase distribution of scientific information to scientists and the public through conferences, symposia, workshops and a variety of electronic and printed media; increase community involvement in research activities and foster a “new” generation of arctic health scientists. Projects include:

**24. The Circumpolar Health and Wellbeing (CHW): Research program for Circumpolar Health and Wellbeing (RCHW), Graduate School of Circumpolar Wellbeing, Health and Adaptation (GCHW), and International Joint Master’s Program in Circumpolar Health and Wellbeing (MCHW)
Lead Country(s): Finland
(EoI# 1045)**

The Research Program for Circumpolar Health and Wellbeing include a curriculum that aims to improve sustainable development of health and wellbeing in the circumpolar regions. The priority research areas are 1) Risks, Stress and Adaptation (performance, symptoms, diseases, injuries, and mortality), 2) Health

and Health Care (elderly, children, and rural population), and 3) Humanistic Approach to Wellbeing (minority languages, minority identities, anthropology and history, societies). The Graduate School of Circumpolar Wellbeing, Health & Adaptation, aims to increase the number of high-quality researchers and experts who are familiar with the health and wellbeing problems related to circumpolar areas and can use a multidisciplinary approach to find new solutions to ensure our wellbeing in the future.

The two-year interdisciplinary Masters in Circumpolar Health & Wellbeing is an international program, and will consist of multiform studies leading to master's degree in the different participating universities.

25. Scientific and professional supplements on human health in polar regions-the International Journal of Circumpolar Health

Lead Country(s): Finland

(EoI # 1046)

The emphasis of the proposed activity is on dissemination of scientific and professional information, promoting communication, outreach, knowledge translation and education on circumpolar health. For this purpose the International Journal of Circumpolar Health will produce a separate series of Circumpolar Health Supplements to serve as a forum of topics of general interest and related to the IPY themes.

26. Development of a Women's Health and Well-Being Track at the 14th International Congress on Circumpolar Health in Yellowknife, NWT July 2009

Lead Country(s): USA

(EoI #1223)

The Women's Health Working Group (WHWG) of the International Union of Circumpolar Health (IUCH) was reactivated at the 13th International Congress of Circumpolar Health in Novosibirsk in June 2006. Participants initially identified at least four areas of mutual interest, including but not limited to 1) perinatal health systems and challenges, 2) infectious disease, particularly HPV and new vaccine; 3) interpersonal violence prevention and 4) health communication and health literacy. The membership confirmed interest in developing a Women's Health and Well-Being track at the 14th International Congress of Circumpolar Health to be held in Yellowknife, NWT in summer 2009. Subcommittees have been formed and work is underway.

27. Telemedicine Cooperation Project

Lead Country(s) US/Russian Federation

(EoI # 1270)

The Northern Forum is cooperating with the Alaska Federal Health Care Access Network (AFHCAN) to implement a strategic and innovative solution to address health care needs of two regions in the Arctic. Together the NF and AFHCAN are facilitating cooperation in telemedicine technology expertise between Alaska, the Republic of Sakha and Khanty-Mansiisk region in Russia. The goal of the project is to promote the establishment of a mutually beneficial collaboration in telemedicine, tele-health, mobile medicine and distance learning in remote areas of the Russian north.

28. Climate Change and Impacts on Human Health in the Arctic: An International Workshop on Emerging Threats and Response of Arctic Communities to Climate Change

Lead Country(s): US

National Initiative

The Arctic Climate Impact Assessment was published in 2005 and was the first comprehensive scientific assessment of climate change in the Arctic (Arctic Council 2005). The assessment also provides recommendations by which communities, researchers and policy makers can begin to address the challenges posed by climate change.

The impact of climate change on human health of Arctic residents will depend on many factors. Much research remains to be done on the relationship between climate change and individual and community health. Climate will continue to influence public health in small and remote communities of the Arctic. The recent record of warming, and potential continued warming of the Arctic, combined with the multiple mechanisms by which climate impacts health indicate an urgent need for adopting community based monitoring strategies that would identify both emerging threats and opportunities.

This project will support a workshop that will bring together researchers from circumpolar countries to: 1) update current knowledge on the impact of climate change on human health, 2) examine the principle conclusions and recommendations of the ACIA on human health to determine potential items for action 3) examine the feasibility of implementing community based monitoring strategy with and across regions to measure and report a common set of climate, health status, environmental, infrastructure and ecosystem indicators

Developing synergy and strategic direction of human health research and health promotion in the Arctic

In order to manage the expanding role of the SDWG in Arctic human health and to ensure cooperation, and coordination between Arctic Council working groups and other circumpolar human health organizations the SDWG has formed a Human Health Expert Group (HHEG). (See report from the Sustainable Development Working Group: An approach to a better integration and collaboration in Arctic Health Activities) The role of the HHEG will be to support and advance knowledge gained through ecosystem and community based research to support circumpolar communities in developing practical responses to improve human health. Moreover, the HHEG aims toward greater collaboration and synergies between Arctic Council Working Groups, Indigenous communities and organizations, academic institutions and other relevant circumpolar organizations in the development of sustainable and integrated approaches to address attendant human health issues. The HHEG and the AHHI Steering Committee will meet at the ICCH meeting in Yellowknife, July 11, 2009 to discuss continued management and oversight of projects brought together under the AHHI.

AHHI Activities and Publications 2007-2009

An AHHI website has been established and is maintained at www.arctichealth.org. The website contains detailed information on the aim and objectives of the AHHI, a listing of projects proposed as part of AHHI, linked to project descriptions, AHHI partners, publications and past and upcoming events.

AHHI held a project workshop in association with The International Network for Circumpolar Health Research (INCHR; www.inchr.org) Circumpolar Health Research meeting, Banff, Alberta, Canada. April 20-25, 2007.

An international workshop on Climate Change and Human health in the Arctic was held February 13-15, 2008, Anchorage, Alaska, USA, as part of the Alaska Forum on the Environment (www.akforum.org). Proceedings are available at www.arctichealth.org and published in the International Journal of Circumpolar Health, 2009. 68 (1) 88-95.

Several IPY AHHI reports have been published. These include:

Proceedings 13th International Congress on Circumpolar Health June 12-16, 2006, Novosibirsk, Russia. "Gateway to the International Polar Year". A limited number of free hard copies will be available via the AHHI web site at www.arctichealth.org.

ICCH13 - The Gateway to Human Health in the International Polar Year - Summary of the Congress Held in Novosibirsk, Russia

Neil Murphy
Int J Circumpolar Health 2006; 65(4), 292-294

The International Polar Year and the Arctic Human Health Initiative
Alan J. Parkinson and Juhani Hassi
Human Ecology 2008 (In Russian)

The Circumpolar Health Movement Comes Full Circle
Neil Murphy
Alaska Med 2007; 49(2), 38-42

The International Polar Year 2007-2008; the Arctic Human Health Legacy
Alan. J. Parkinson
Alaska Med 2007; 49(2), 43-45

International Polar Year Arctic Human Health Initiative
Alan J Parkinson, Pamela Orr, Neil Murphy
Int J Circumpolar Health 2006; 65(4), 284-289

Special IPY Edition of the CDC's Emerging Infectious Diseases Journal, January 2008.
The issue can be accessed at (www.cdc.gov/eid/content/14/1/contents_v14n1.htm).

AHHI held a symposium and a steering committee meeting at the Annual Conference of the International Network for Circumpolar Health research will be in Tromso, Norway May 12-16, 2008. (http://uit.no/sih/circumpolar_health)

An AHHI workshop was held at the 6th International Congress of Arctic Social Sciences (ICASS VI) Nuuk, Greenland, August 25-29, 2008.

Plans 2009-2010

The AHHI will continue through 2009 and 2010. The IUCH will host the 14th International Congress on Circumpolar Health, Securing the IPY Legacy: From Research to Action, July 12-16, 2009, in Yellowknife Northwest Territories, Canada. A session is being planned that will focus on accomplishments of AHHI, and the roles of the Arctic Council and the IUCH in promoting human health in the Arctic

The AHHI Steering committee will meet July 11, 2009, in Yellowknife Northwest Territories, Canada. The AHHI Steering committee will continue to monitor, record, maintain the AHHI Website, and provide updates on IPY Human health projects through 2009-2010.

A report on the evolution and accomplishments of the AHHI will be published in the International Journal of Circumpolar Health in 2009.

An Arctic Human Health Initiative Symposium will be conducted at the Oslo IPY Science Conference, June 7-11, 2010

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Table 1: AHHI Project criteria

An IPY AHHI project must include an international partnership of at least one other collaborator in a circumpolar country.

- 1) Research Projects that build on existing Arctic Council human health activities
 - Expansion of telemedicine-health communication
 - International Circumpolar Surveillance-Infectious Diseases
 - Assessment of health & wellbeing of Children and Youth
 - Monitoring-human health effects of contaminants
 - Monitoring effects of Climate Change on Human Health
 - Surveys of living conditions in Arctic regions
- 2) Research Projects that expand existing (or propose new) human health surveillance, monitoring and research networks.
- 3) Research Projects that use surveys to characterize health status, assess health risks, and determine culturally appropriate interventions.
- 4) Research projects that include studies of the human health impact of:
 - anthropogenic pollution in the Arctic
 - Contaminants and zoonotic infectious diseases, effects on the food supply
 - Climate variability
 - Oil and Gas development
 - Infectious diseases, Tb, HIV/AIDS, Hepatitis, vaccine preventable, emerging threats
 - Chronic diseases, cancer, CVD, obesity, diabetes
 - Behavioral health, suicide, unintentional injuries
- 5) Projects in the area of education outreach and communication that will:
 - Focus public and political attention on Arctic health issues
 - Increase dialog between researchers policy makers and communities
 - Increase distribution of scientific information to scientists through conferences, symposia, workshops, electronic and printed media
 - Increase community involvement in research activities
 - Foster a new generation of Arctic health scientists