Improving human health in the Arctic: the expanding role of the Arctic Council’s Sustainable Development Working Group

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ABSTRACT

Human health is now a critical component of the Arctic Council’s sustainable development program. The newly formed Arctic Human Health Expert Group (AHHEG), a subsidiary body of experts within the Sustainable Development Working Group (SDWG), will focus on identifying human health priorities that will improve the health of Arctic residents; engage experts in the field to evaluate possible actions; strengthen co-operation and collaboration between Arctic Council working groups and other Arctic co-operatives; and promote the translation of research into actions that will improve the health of Arctic peoples.

(Keywords: Arctic, human health, Arctic Council)

INTRODUCTION

While the health of Arctic populations has greatly improved over the last 50 years, life expectancy and infant mortality rates have become notably higher in recent years among Indigenous Arctic residents in the U.S. Arctic, northern Canada, Greenland and the Russian Federation than in Arctic residents of Nordic countries (1). The rapid pace of change within the Arctic also presents new challenges to the health and well-being of Arctic residents. For example, in many Arctic regions, living conditions continue to change as the economy shifts from one based on subsistence hunting and gathering to one based on cash. Across the circumpolar north there is increasing activity towards sustainable development through local resource development and widening involvement in the global economy. Such changes have had some positive influences on the physical health of Arctic residents, including improved
housing conditions, a more stable supply of food, increased access to Western goods and a decrease in morbidity and mortality from infectious diseases. However, these changes in lifestyle have led to an increase in the prevalence of chronic diseases such as diabetes, hypertension, obesity and cardiovascular diseases. In addition, increasing rates of child abuse, alcohol abuse, drug abuse, domestic violence, suicide and unintentional injury are also associated with rapid cultural change, loss of cultural identity and lower self-esteem in these populations (2).

Similarly, globalization of the Arctic economy has been accompanied by improvements in the Arctic transportation infrastructure. Many communities that were once isolated are now linked to major cities by air transportation. Consequently, these communities are now vulnerable to many infectious diseases (influenza, SARS-like infectious diseases, antibiotic resistant pathogens such as multi-drug resistant tuberculosis) commonly found in more densely populated urban centres (3).

Environmental contaminants continue to cause health problems globally. Contaminants such as mercury, other heavy metals, PCBs, DDT, dioxins and other organochlorines originate primarily in the mid-latitude industrial and agricultural areas of the globe but reach the Arctic through atmospheric, river and ocean transport where they become concentrated. Their subsequent bio-magnification in the Arctic food webs and their appearance in subsistence food are of great concern to the Indigenous peoples and other Arctic residents who rely on these foods. Potential human health effects include damage to the endocrine and immune system in adults and children and to the developing brain in infants. A new concern is the role of mercury in the onset of cardiovascular disease. More research is needed to identify the levels and human health effects of these contaminants in Arctic residents, particularly the very young, and to provide guidance on both the risks and benefits of consuming traditional food that may contain these contaminants (4,5,6,7).

Climate change is already affecting many Arctic rural communities, bringing with it 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, socio-economic status, lifestyle, culture, location and capacity of the local health infrastructure system to adapt. It is likely that the most vulnerable will be those living close to the land in remote communities, who are already facing health-related changes (8,9,10).

Human health and the Arctic Council

The Arctic Council (www.arctic-council.org), established in 1996, is a ministerial intergovernmental forum promoting co-operation, coordination and interaction between 8 Arctic member states (the U.S., Canada, Denmark/Greenland, Iceland, Norway, Sweden, Finland and the Russian Federation), Indigenous communities and other Arctic residents on common Arctic concerns such as sustainable development and environmental protection. The scientific work of the Arctic Council is carried out in 6 working groups (Fig. 1). The Arctic Council Action Plan (ACAP), Arctic Monitoring and Assessment Program (AMAP), Conservation of Arctic Flora and Fauna (CAFF), Protection of the Marine Environment (PAME), Emergency Prevention, Prepared-
ness and Response (EPPR) and Sustainable Development Working Group (SDWG). The working groups conduct research and other activities in the areas of monitoring, assessing and preventing pollution in the Arctic; climate change; biodiversity conservation; emergency preparedness and response; sustainable development; and the monitoring and assessment of living conditions of Arctic residents, including monitoring human health (See text box). The human health activities of the Arctic Council primarily reside in the AMAP and SDWG. 

**Arctic Monitoring and Assessment Program**
Initially established in 1991 as part of the Arctic Environmental Protection Strategy (AEPS), the Arctic Monitoring and Assessment Program is now a working group within the Arctic Council with a mandate to conduct assessments of levels, trends and effects of contaminants on ecosystems and humans, including effects of oil and gas activities (www.amap.no). A special priority has been placed on the potential impacts of contaminants on the health of Arctic residents. The human health activities of the AMAP are co-ordinated by an expert group known as the AMAP Human Health Assessment Group (HHAG). Members are senior scientists conducting research in the area of anthropogenic contaminants and human health from all 8 Arctic member states. The main objectives of the AMAP HHAG are to continue co-operation on health issues, including assessing the relationships between pollution and health. To date, AMAP has completed and published 3 human health assessments (4,5,6) and was a major contributor to the Arctic Climate Impact Assessment, which included a chapter on the impact of climate change on human health in the Arctic (8).

**Arctic Council**

| Arctic Member State Representatives |
|------------------------------------|
| Foreign Ministers |
| Senior Arctic Officials |
| Permanent Participants (Indigenous peoples' organizations) |
| Observers (countries, organizations) |

| ACAP | AMAP | SDWG | EPPR | PAME | CAFF |
|------|------|------|------|------|------|
| Arctic Council Action Plan | Arctic Monitoring and Assessment Program | Sustainable Development Working Group | Emergency Prevention Preparedness and Response | Protection of the Marine Environment | Conservation of Arctic Flora and Fauna |

| HHAG | AHHEG |
|------|------|
| Human Health Assessment Group | Arctic Human Health Expert Group |

**Figure 1.** Arctic Council organizational structure.
**Sustainable Development Working Group**

The mandate of the Arctic Council's Sustainable Development Working Group (SDWG) is to advance sustainable development in the Arctic. This includes opportunities to protect and enhance the environment, economies, culture and health of the Indigenous communities and other inhabitants of the Arctic, and to improve the environmental, economic and social conditions of Arctic communities as a whole. In general, project proposals for activities can be made to the SDWG by any member state (lead country) together with the support or participation of other member states and permanent participants. Participation can include the provision of funding, human resources, in-kind contributions or other resources. Acceptable project proposals are then recommended by the SDWG for adoption and approval by the Senior Arctic Officials. Activities should be focused on priority subject areas, be circumpolar in nature and have circumpolar participation effect and influence.

Since 1998, the SDWG has undertaken several activities intended to improve the health of Arctic residents. These have included:

1. **The Survey of Living Conditions in the Arctic (SliCA).** This is an ongoing project, initiated in 1998 and led by Greenland, Denmark and the U.S. (www.arcticlivingconditions.org). It is an interdisciplinary and international research project designed to develop a new research design for the measurement of living conditions and individual well-being among the Inuit and Saami peoples in the Arctic with an emphasis on the welfare priorities of the Indigenous peoples (11).

2. **Future of Children and Youth of the Arctic.** This project focused on improving the understanding of the unique health challenges facing the children and youth of the Arctic, providing a benchmark for analysing their health and well-being and putting forward recommendations to address their specific health needs. The analysis of this Canadian-led initiative was reported in 2005 (http://portal.sdwg.org/content.php?doc=23&xwm=true). The report notes that, even though significant improvements have been made in the health of children and youth in many regions of the Arctic, disparities in the health status between Arctic Indigenous peoples and national populations remain. Policies to address these disparities will require standardized data that are comparable across nations, Arctic regions and Indigenous groups.

3. **Telemedicine in the Arctic.** This U.S. led project was designed to share information among the Arctic Council's 8 member states and 6 permanent participants about programmatic successes and lessons that have been learned from national and international experiences in health care delivery, training and education in remote areas (http://portal.sdwg.org/content.php?doc=23&xwm=true). A result of this initiative has been a project sponsored by the Northern Forum, the regional governments of Alaska (U.S.), Khanty-Mansiysk and the Sakha Republic (Russia) which are working together to expand the use of telemedicine technology in rural Russia. Another outcome has been the establishment of the National Library of Medicine's Arctic Health website, hosted by the University of Alaska Anchorage/Alaska Pacific University Consortium Library as a source of circumpolar health information (www.arctichealth.org).
4. The International Circumpolar Surveillance of Emerging Infectious Diseases (ICS).

Established in 1999, and led by the U.S., this project has established an integrated International Circumpolar Surveillance (ICS) system for infectious diseases by creating a network of hospital and public health laboratories throughout the Arctic. The network allows collection and sharing of uniform laboratory and epidemiologic data between Arctic countries to facilitate the tracking of infectious diseases of concern to Arctic residents and the formulation and implementation of prevention and control strategies (12,13).

In 2004, the Arctic Human Development Report, an Iceland-led project, was published under the auspices of the SDWG (2). This report provides a comprehensive assessment of human conditions in the circumpolar region and describes both a framework and a set of priorities for the SDWG. In the area of human health, the authors outline 3 major trends in health and well-being in the Arctic that could benefit from increased attention. The first trend is the increasing problems with mental health and violence in many Arctic communities. The report suggests that, by using new approaches that engage the local community, rates of suicide may be reduced. The second trend is the increasing importance of community-based participatory health research, which may benefit research in the area of nutrition and traditional foods. The third trend is the increasing use of new technology, which may be used to address health concerns and service delivery in remote and rural regions throughout the Arctic.

While there is an increasing interest within the Arctic Council in addressing the human health concerns of all Arctic residents, there is also a need for a more strategic approach that includes the identification of priority areas of concern, the translation of research into actions that benefit the health of Arctic residents, the co-ordination of human health activities within other working groups of the Arctic Council and the engagement of other human health co-operatives that co-ordinate health-related programs and activities in the Arctic.

Other organizations that co-operate on human health in the Arctic

A number other of multinational governmental and non-governmental organizations collaborate on improving the health and well-being in circumpolar regions. It will be important that the Arctic Council develop links with these organizations to promote better human health programs. This will ensure synergy between programs, avoid any duplication of effort in specific program areas, and engage appropriate experts from these organizations in the Arctic Council’s human health activities.

The International Union for Circumpolar Health (www.iuch.net) is a non-governmental organization comprised of 5 circumpolar health organizations—the American Society for Circumpolar Health, the Canadian Society for Circumpolar Health, the Nordic Council for Arctic Medical Research, the Siberian Branch of the Russian Academy of Sciences, the Medical Section and the Danish Greenlandic Society of Circumpolar Health— which promotes circumpolar collaboration and co-operation through the activities of 13 working groups in different fields of health and medicine (www.iuch.net ). Outreach education 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. Its most recent meeting was held in July 2009 in Yellowknife, NWT, Canada. The IUCH has observer status on the Arctic Council and is a source of experts in all areas of Arctic human health.

The International Arctic Social Sciences Association (IASSA), also a non-governmental organization, draws membership from disciplines relating to behavioural, 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 co-operation and increased participation of social scientists in national and international Arctic research. The organization promotes communication and co-ordination 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 International Network for Circumpolar Health Research (INCHR), another non-governmental organization (www.inchr.com), is a voluntary network of individual researchers, research trainees and supporters of research who are based in academic research centres, Indigenous peoples’ organizations, regional health authorities, scientific/professional associations and government agencies, and who share the goal of improving the health of the residents of the circumpolar regions through international co-operation in scientific research. INCHR conducts, sponsors and promotes research that investigates the patterns, determinants and impacts of health conditions among circumpolar peoples and strategies for improving health; supports research training at all levels and increases the capacity for circumpolar health research in communities, service delivery agencies and higher educational institutions; and facilitates exchange, communication and dissemination of research data and strengthens the health information system in the circumpolar regions.

The Northern Dimension (ND) Partnership in Public Health and Social Wellbeing (NDPHS) (www.ndphs.org), established in 2003, has a membership of 13 countries (Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Latvia, Lithuania, Poland, Russia, Sweden) and 8 affiliated organizations. The aim of the NDPHS is to promote sustainable development in the ND area by improving human health and social well-being through intensified co-operation and enhanced co-operation. Priorities include (1) the reduction of major communicable diseases and prevention of lifestyle-related diseases (including HIV/AIDS and tuberculosis, use of illicit drugs, cardiovascular diseases and consequences of socially distressing conditions); and (2) the promotion of healthy and socially rewarding lifestyles (including determinants of health and social well-being, such as sexual behaviour, alcohol use, smoking, use of illicit drugs, types of employment, social environments and skills).

The Barents Euro Arctic Region (BEAC), established the Barents Euro Arctic Council and the Co-operation Program on Health and Related Issues in 2003. The BEAC (www.beac.st; www.barents.no/health-cooperation.137534.en.html) draws membership from both national and local regions, including northern Norway (Nordland, Tromso, Finnmark), Finland (Lapland, Oulu, Kainuu), Sweden (Norrbotten, Vasterbotten), and the northwestern Russian Federation (Murmansk, Karelia, Arkhangelsk, Komi, Nenets). The Working Group on Health...
and Social Issues is chaired by Norway and Murmansk (2006–2007). Priorities include:
1. Prevention of communicable diseases.
2. Prevention of lifestyle and related health and social problems, and promotion of healthy lifestyles.
3. Development and integration of primary health care and social services. Multilateral programs include HIV/AIDS prevention and control (2004–present), and Children and Youth at Risk (new in 2007).

The Northern Forum (www.northern-forum.org) is a non-profit organization of regional or subnational governments from 9 northern countries (Canada, Iceland, People’s Republic of China, Finland, Japan, Republic of Korea, Russian Federation and the U.S.). The Forums board of governors consists of senior regional governmental executives such as premiers, presidents, heads of administration and governors. The secretariat is based in Anchorage, Alaska. The Northern Forum has fostered communication and co-operation among northern regions, providing avenues for discussion, training and co-operative ventures. It has sponsored scientific, cultural and other workshops, symposiums and conferences to address common issues in the North, and it manages a diverse group of projects designed to protect the environment, tackle common social and cultural issues and improve living conditions. Health projects focus on promoting healthy lifestyles and the use of technology to improve health care. Specific projects include an expansion of telemedicine in remote regions of Russia; mitigating substance abuse through training of professionals on how to use improved treatment protocols; and promoting infectious disease monitoring.

The International Polar Year and human health

The Arctic Council recognized that the International Polar Year (IPY) 2007–2008 represented a unique opportunity to further stimulate co-operation and co-ordination on Arctic research, increase the awareness and visibility of Arctic regions, and expand co-operation on human health (14). In response, the SDWG submitted a proposal entitled “The Arctic Human Health Initiative” (AHHI) to the IPY International Program Office for consideration as an IPY co-ordinating project that would advance the joint circumpolar human health research agendas of the Arctic Council working groups and the International Union for Circumpolar Health. The project aimed to link researchers with potential international collaborators and to serve as a focal point for human health research, education, outreach, and communication activities during IPY (2007–2008). The overall goals of the AHHI were to increase awareness and visibility of human health concerns of Arctic peoples, foster human health research, and promote health strategies that would improve health and well-being of all Arctic residents. Proposed activities included:

• Expanding research networks to enhance the surveillance and monitoring of health issues of concern to Arctic peoples and increasing collaboration and co-ordination of human health research; fostering research to 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 would focus public and political attention on Arctic health issues using a variety of publications, printed and electronic reports from scientific conferences, symposia and workshops to target researchers, students, communities, and policymakers.
• Promoting the translation of research into health policy and community action, including the implementation of prevention strategies and health promotion.
• Promoting synergy and strategic direction of Arctic human health research and health promotion.

The AHHI monitored the progress of 28 individual IPY human health projects in the thematic areas of network expansion (5), infectious disease research (6), environmental health research (7), behavioral and mental health research (3), and outreach education and communication projects (5). While some projects have been completed, others have continued beyond the International Polar Year. Individual project details can be viewed at www.arctichealth.org.

Increasing co-operation and co-ordination beyond the International Polar Year

This expansion of, and interest in, Arctic Council human health activities during the IPY underscored the need to develop a strategic direction and a structure for prioritizing, approving and monitoring human health activities within the SDWG and to ensure co-ordination of projects with other working groups of the Arctic Council and other circumpolar organizations engaged in improving the health of Arctic peoples.

In order to manage this expanding role, the SDWG has formed the Arctic Human Health Expert Group (AHHEG) as a subsidiary body of the SDWG that will provide expertise on human health topics, co-ordinate human health activities between Arctic Council working groups and build links and partnerships with other circumpolar human health organizations and Indigenous peoples’ organizations. The AHHEG membership is comprised of experts in the field who are appointed by the SDWG member countries and permanent participants. Their expertise includes health systems; services and policy; social cultural and economic aspects of health; Indigenous and traditional knowledge; physical and social sciences including behavioural and mental health and human biology; and environmental health, contaminants and climate change.

The AHHEG will help the Arctic Council to better co-ordinate its human health activities by
1. identifying priority projects that will result in improved health,
2. engaging the appropriate subject matter experts to evaluate potential actions and collaborate on priority projects,
3. monitoring a project’s progress, and
4. improving the Arctic Council’s ability to translate knowledge gained into meaningful actions that will benefit communities and improve their members’ health.

In general, priority health projects can be brought to the AHHEG by members of the circumpolar health community (e.g., IUCH, IASSA, INCHR), by the SDWG of other Arctic Council working groups (e.g., AMAP, PAME, CAFF, ACAP), or by national governments or permanent participants.

Early priorities already identified by the AHHEG include:
1. behavioural and mental health, including youth suicides,
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2. diet and nutrition with an emphasis on food security, safe water, obesity, diabetes and cardiovascular diseases,
3. health care for Indigenous populations, and culturally appropriate health care for the elderly,
4. inequalities in health, and
5. the impact of climate change on human health.

Under the present SDWG operational structure, a human health project developed within the AHHEG and presented to the SDWG must have the support of governmental representatives from 2 or more Arctic member states before it can be recommended for approval by the SAO. The proposal should include justification for the new project, participating countries and permanent participants, work plans, sources of funding, provisions for outreach and dissemination of results, and the need for any follow-up activities. An important goal of the AHHEG is to promote, where possible, the translation of research results into health policy, or community action including implementation of prevention strategies and health promotion. In the past, the Arctic Council has proven to be an efficient instrument for providing guidelines, best practices and knowledge for other international forums where decisions are made (2,4–6,8). Therefore, presentation of human health policy recommendations that are scientifically based can be made through AHHEG and the SDWG to the Senior Arctic Officials and to the ministers for their consideration and recommendations for future action.

Human health is now a critical component of the Arctic Council’s sustainable development program. The AHHEG within the SDWG will explore ways to ensure greater integration of human health activities, strengthen co-operation and collaboration between Arctic Council working groups and other Arctic co-operatives and promote the translation of research into actions that will improve the health of all Arctic residents.

How the Arctic Council Works

Decisions within the Arctic Council are taken at meetings of the foreign ministers of member states (or their designees) and the political leaders of permanent participants. Ministerial meetings are held every 2 years. The chairmanship of the Council and accompanying secretariat rotate among the member states (these positions are currently held by Denmark together with Greenland). Between ministerial meetings, the operation of the Council is administered by the Committee of Senior Arctic Officials, comprised of representatives of foreign ministries’ of the member states and representatives of the Indigenous peoples (Aleut International Association, Arctic Athabaskan Council, Gwitch’ In Council International, Russian Association of Indigenous Peoples of the North, Saami Council) as permanent participants of the Arctic Council. The scientific work of the Arctic Council is carried out in 6 working groups (ACAP, AMAP, CAFF, EPPR, PAME and SDWG). The working groups are focused on sustainable development; monitoring, assessing and preventing pollution in the Arctic; climate change; biodiversity conservation and sustainable use; emergency preparedness and prevention; and living conditions of Arctic residents. Working groups may create subsidiary bodies comprised of subject matter experts to co-ordinate and carry out programs and projects under the guidance and direction of a particular working group. Two such groups now include the AMAP Human Health Assessment Group and the SDWG Arctic Human Health Expert Group. The expert groups have the independent responsibility for the generation and content of scientific evaluations, assessments, recommendations and summary reports. These are in turn presented to the working groups which are responsible for the presentation of scientifically based policy recommendations to the Senior Arctic Officials and to the ministers for their consideration and action. The Arctic Council has proven to be an efficient instrument for providing guidelines, best practices and knowledge for other international forums where decisions on Arctic issues are made.
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