The International Polar Year 2007-2008; The Arctic Human Health Legacy

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Abstract
Life expectancy in Arctic populations has greatly improved over the last 50 years. Much of this improvement can be attributed to health research that has resulted in a reduction in morbidity and mortality from infectious diseases, such as tuberculosis, and the vaccine-preventable diseases of childhood. In addition, public health research has resulted in innovations such as the provision of safe water supplies, sewage disposal, and the development of community-based medical providers that have contributed to improved care and access to care for injuries and illness.

INTRODUCTION

On three occasions over the past 125 years, 1882-83, 1932-33, and 1957-58, scientists from around the world have come together to organize a concentrated one year effort of scientific study and exploration of polar regions known as the IPY. Each of these Polar Years has been characterized by international cooperation in science that has extended far beyond each Polar Year and allowed for scientific endeavors to be undertaken that were unattainable by any single country alone.

While human health and well-being has not been a topic of research in any previous IPY, this Polar Year presents us with a unique opportunity to focus world attention on Arctic human health successes and challenges, and perhaps will allow us to further extend the international cooperation and collaboration that the Circumpolar health movement began almost 50 years ago.

The health of Arctic populations can be determined from a range of indicators, including life expectancy, birth rate, infant mortality, population mortality, and age-adjusted causes of death. Life expectancy in Arctic populations has greatly improved over the last 50 years. Much of this improvement can be attributed to health research that has resulted in a reduction in morbidity and mortality from infectious diseases, such as tuberculosis, and the vaccine-preventable diseases of childhood. In addition, public health research has resulted in innovations such as the provision of safe water supplies, sewage disposal, and the development of community-based medical providers that have contributed to improved care and access to care for injuries and illness.

Research on the negative health effects of tobacco has led to a decrease in smoking rates for Arctic residents. 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 (i.e. higher incidence of gastric, nasopharyngeal, renal cancers) not explained by known risk factors.

However, despite these improvements in health indicators of Arctic residents, life expectancy and infant mortality are higher in indigenous Arctic residents in the US, Canada, and northern European countries. For example, for 2000, life expectancy for Alaska Natives was 69.6 years which lags behind the general US population which was 76.5 years. Similarly, indigenous residents of the US, Arctic and Greenland have higher mortality rates for injury, suicide and infant infections.

A common theme across the Arctic is the rapid pace of change presenting new challenges to the health and well-being of Arctic residents that will require additional health research. Living conditions have and continue to change 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, improved housing conditions, stable supply of food, increased access to more Western goods, and decreases in morbidity and mortality from infectious diseases. But these changes in lifestyle represent a move away from traditional subsistence hunting and 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, and unintentional injury are also connected to rapid cultural change, loss of cultural identity and self esteem.

Globalization has meant improvements in the transportation infrastructure. Many communities that were once isolated are now linked to major cities by air transportation. This has resulted in the introduction of new health problems such as tooth decay and asthma.
transportation. Consequently, these communities are now vulnerable to the many infectious diseases (influenza, SARS-like infectious diseases, and antibiotic resistant pathogens such as multi-drug resistant tuberculosis) that are only one airplane ride away from more densely populated urban centers.\(^8\)

Environmental contaminants are a global problem. Contaminants such as mercury, other heavy metals, 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, 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 provide guidance on both the risks and benefits of consuming traditional foods.\(^7\)

The changing climate is affecting rural 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 close to the land in remote communities and those already facing health-related changes.\(^9\) Direct health-related effects, for example, may include injuries, hypothermia, frostbite, effects related to travel, unpredictable ice and weather conditions, and heat stress in summer.\(^9\) Indirect effects include changes in the distribution of vector borne diseases and zoonotic infectious diseases, as well as changes in access to safe water supplies. Other indirect effects include damage to the sanitation infrastructures by thawing of the permafrost, and changes in the availability of the traditional food supply because of altered migration patterns of subsistence species.\(^9\) These effects of change in the environment and traditional lifestyle will result in an increase in mental and social stress.\(^5\)

To address these challenges to the health and well being of Arctic peoples will require both a concerted effort and an increased level of cooperation and coordination by the Circumpolar health community at large.

THE INTERNATIONAL POLAR YEAR AND THE ARCTIC HUMAN HEALTH INITIATIVE

The IPY represents a unique opportunity to increase awareness and visibility of human health concerns of Arctic peoples, foster human health research, promote cooperation between countries conducting research, and develop and implement health strategies that will improve the health and well-being of all Arctic residents.\(^10\) The AHHI is an Arctic Council IPY initiative that aims to build on existing Arctic Council and IUCH human health research activities by:

- Expanding research networks that will enhance:

  - Surveillance and monitoring of health issues of concern to Arctic peoples
  - Standardization of methods between countries
  - Collaboration and coordination of research activities
  - Fostering research activities that will examine the health impacts of:
    - Anthropogenic pollution
    - Modernization and lifestyle changes
    - Climate variability
    - Infectious and chronic diseases
    - Intentional and unintentional injuries
    - Early interventions on disease and social behavior later in life
    - Promoting education outreach and communication:
      - 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
      - Foster a “new” generation of Arctic health scientists
      - Promoting the translation of research into health policy, community action and implementation of prevention and control strategies.

Coordination of the AHHI will be facilitated through the formation of a steering committee which will have representation from member organizations of the IUCH, human health working groups, and permanent participants of the Arctic Council.

The 13th triennial IUCH ICCH which was held June 12-15, 2006 in the Novosibirsk, Russian Federation served as the “Gateway to IPY” for the Circumpolar health community and brought together Circumpolar healthcare professionals, workers, researchers, policy makers and community members. The meeting presented a forum for discussion on their respective visions and priorities for human health research for the IPY and beyond. These discussions resulted in recommendations that emphasized the role of communities in health research planning, research activities, and the translation of research findings into actions that would directly benefit the health and well-being of Arctic communities. The 14th congress to be held in 2009 in Yellowknife, Canada will serve to consolidate the AHHIIPY legacy, and will be used to set the Arctic human health agenda for the next decade.

CONCLUSION

The 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 AHHI is an Arctic Council IPY initiative that aims to build and expand on existing Arctic Council and IUCH 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.

REFERENCES


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