



Arctic Council SAO plenary meeting (eDocs code: ACSAOUS202) 16-17 March 2016, Fairbanks, Alaska, U.S.A.

Document Title

Operationalizing One Health in the Arctic Draft Project Proposal
Template

Agenda item number

6.4b

Submitted by

SDWG

Document filename

EDOCS-3256-v1-

ACSAOUS202_Fairbanks_2016_6-4b_SDWG_Arctic_One_Health_Proposal_Updated

Number of pages, not including this cover sheet

8

Type (e.g. report, progress report, etc.)

Project Proposal Template

<p>Project Title:</p> <p>Operationalizing One Health in the Arctic</p>	<p>Lead Country: United States</p> <p>Project leader(s) Bruce Ruscio, U.S. State Dept. Thomas Hennessy, Center for Disease Control and Prevention Michael Brubaker, Alaska Native Tribal Health Consortium Joshua Glasser, U.S. State Dept.</p> <p>Co-Leads: Canada (others TBC)</p>
<p>Total Estimated Cost of Project:</p> <p>TBD</p>	<p>Relationship to other AC Working Groups:</p> <p>All AC working groups are Stakeholders in One Health</p>

Objective of Project:

Operationalize a One Health approach in the Arctic to forge co-equal, all inclusive collaborations across multiple scientific disciplines and Arctic communities in order to enhance resiliency of the Arctic inhabitants through an enhanced understanding of climatic change impacts on health risks to people, animals, and the environment.

Rationale:

One Health is an approach to assess health issues at the interface between humans, animals, and ecosystems. It is a valuable strategy for the Arctic, where there is a great need to understand the complex nature of climatic change on the health of all of the Arctic. The One Health approach assesses the potential health effects at the human-animal-ecosystem interface and can greatly enhance scientific understanding of the threats to Arctic communities and ecosystems. It will contribute to the development of new tools for effective policies focused on reducing the burden of health threats and enhancing community resiliency. These include tools and methods for assessing vulnerability, screening and evaluation strategies, programs for climate risks assessments, identifying adaptation options, and weighing the costs and benefits of those options. Through a Regionalized One Health approach assessing health risks at the human-animal-ecosystem interface will significantly contribute to understanding the complex nature of climate change on health of all Arctic inhabitants.

Activities, Timing, and Outputs:

By the end of the U.S. chairmanship, we will have taken steps to regionalize a One Health approach across the Arctic, and will have contributed key findings to AC reports, as well as relevant meetings. A One Health survey instrument and implementation checklist will be developed to measure the current status of One Health approach, and to assess progress towards on-the-ground implementation of One Health. Both the survey and checklist will inform priority setting, and facilitate non-expert engagement with the initiative. This effort will further advance the integration of circumpolar stakeholders and promote improved understanding of Arctic climate change, and its impact on humans and ecosystems. We propose a phased approach outlined below. These phases are part of an integrated systematic approach and the order in which these are listed does not necessarily reflect the temporal sequence of implementation.

Specifically:

1. **By October 2015, establish a leadership team to develop strategy for implementing an Arctic One Health approach. The team will have primary responsibility for advancing the activities identified below, and will at minimum include:**
 - a. Technical experts from a range of disciplines (health, environment, wildlife management, agriculture)
 - b. Political or policy-oriented representation from Arctic States and Permanent Participants (observers will be welcome but not required to participate).
2. **By the end of 2015 develop, implement and evaluate the results of a One Health Survey to obtaining the current statuses of One Health in the Arctic, and to identify hurdles and opportunities in regionalizing a One Health approach.**
3. **By the end of 2015, schedule and initiate a series of Arctic regional knowledge-sharing workshops or webinars** on priority technical matters (e.g., epidemiology, disease surveillance, environmental science, invasive species, food security and the One Health Model.) The goals will be 1) to provide a forum for cross-sectorial dialog focused on establishing an Arctic One Health Program; 2) identify the current landscape of One Health activities in the Arctic; 3) bolster commitments from key national and community institutions to designate One Health hubs, as POCs for future collaborative activities; 4) agree to a check-list to measure progress towards the operationalization of One Health (such check-lists exist, but will need to be adapted to the unique characteristics of the Arctic).
4. **By mid-year 2016, a Needs Assessment – built on the results of the workshops and other consultations – will be launched**, to identify technical priorities and constraints on implementation (funding, policy, etc.), and to understand progress made by already-existing activities on the steps laid out in the check-list. This can be accomplished through a program such as the University of Minnesota and the U.S. Department of Agriculture’s *“The One Health Systems Mapping and Analysis Resource Toolkit (OH-*

SMART.” These findings will inform One Health Hubs and international scientific teams engaged in Arctic One Health Collaborative Investigation Projects (AOHCIP).

5. **By the end of 2016, One Health Hubs will be designated and linked by agreements** between the key institutions in the Arctic, to provide a framework for future capacity building and coordination activities, in line with next steps on the agreed-upon check-list. The One Health Hubs will be connected to form an informal Arctic One Health Network.
6. **Beyond 2016, One Health Hub activities and Arctic One Health Collaborative Investigation Projects (AOHCIPs)** will be conducted, in line with steps 1-4, to address the scientific, technical, policy, and international coordination activities laid out in the check-list and needs assessment. The One Health Hubs will also provide input to Arctic Council reports and meetings through written and verbal reports, so that results are effectively captured in the Council’s meetings and documents.

Incorporating Traditional and Local Knowledge (TLK) in Arctic Region One Health

1. Arctic States will work with Permanent Participants to ensure TLK holders are represented in the leadership team to develop strategy for implementing an Arctic One Health framework.
2. Arctic States will work with Permanent Participants to ensure TLK holders are actively involved in the designation of Arctic One Health Hubs.

Value added of Traditional and Local Knowledge (TLK) in Arctic One Health

Core to the One Health model is a participatory community-based approach, which takes into account traditional and local knowledge, and uses that experience to identify and respond to health issues. The indigenous peoples of the circumpolar region possess immense TLK of their environments and ecosystems based on millennia of living close to nature. Additionally, TLK, and communities perceptions of and relationships with the environment, are important elements of cultural identity - for a key facet of physical and mental health.

TLK will contribute to Arctic One Health in multiple ways.

- Reliability and consistency of One Health assessments and finding.
 - o TLK is based on observations made by local experts who know intimately the wildlife, people and environment. As a result, TLK is critical for recognizing and characterizing real change, as opposed to occasional or random events.
- A more comprehensive One Health risk-assessment and risk-management process.
 - o TLK will inform discussion about emerging threats, advance collaborations, prioritize actions, and provide input on needed interventions, planning, policy, resilience capacity.

- One Health programs will achieve a more complete analysis of the link between climate change and the holistic impact on the lives of Arctic human and animal residents.
 - o TLK includes unique perspectives that will contribute to the assessment and understanding of the effects of climate change on biodiversity, and in managing biodiversity conservation in a changing environment.
- TLK will contribute to advancing the knowledge and expertise of One Health collaborating scientific specialists from Arctic and non-Arctic communities alike.
- TLK will support One Health contributions to advancing prevention through a grounded understanding of the importance health issues direct impact on the lives of residents.

Budget: The key cost associated with this project will be the convening of regional knowledge workshops and preparing the Needs Assessment program and report. It is envisioned that Arctic Council States, Permanent Participants and Observers would pay for the travel associated with their respective delegations to each workshop, while the meeting host would cover the costs associated with the meeting itself (facilities, food and drink during the meetings, etc.)

Background:

One Health is a concept for developing and sustaining broad interdisciplinary collaboration for the early identification, prevention and mitigation of health risks in human, animals and the environment – “All Health.” Recognizing that ecosystem linkages and interdependencies necessitate a holistic approach to health issues is a core tenet of One Health.^{i,ii,iii} A One Health approach therefore, requires diverse experts and wide ranging stakeholders in addressing the complex health issues at the human-animal-ecosystem interface.

The Arctic is known as being both rugged and resilient due in part to persistent cold temperatures and the largely frozen conditions of the land and sea. But the Arctic is particularly susceptible to the impact of climate change, and as the lands and ice thaw, it is an increasingly fragile region. Arctic temperatures have risen a twice the rate of other part of the world resulting in decreased sea ice, coastal erosion, changes in precipitation magnitude and frequency, permafrost thawing, and altered distribution of animal species.^{iv} The associated health risks for humans and animals include potential changes in pathogen proliferation and vector borne disease, degradation of drinking water quality and availability, food quality and availability, and changes in animal species distribution, among others.^{v,vi,vii,viii}

The Arctic’s health is further at risk from environmental contaminants. Contaminants generated outside the Arctic region including heavy metals and persistent organic pollutants are transported by manmade and natural mechanism to the Arctic where they bioaccumulate and enter the food chain, harming various animal species, including humans who depend on wild life for food.^{ix, x}

As ice-free periods increase and there is greater access to the Arctic, maritime traffic will increase the risk of sudden and catastrophic release of contaminants, while off-shore oil and gas extraction activities will present additional contamination risks.^{xi}

Health threats will evolve in types, frequency, severity and complexity as the dynamic impacts of climate change on the Arctic ecosystems unfold.^{xii,xiii,xiv} Efforts to identify and understand the risks will require innovative science, novel tools and integrated approaches. The implications of health risks to the Arctic and beyond, calls for multidisciplinary and diverse stakeholder collaborations to advance the fundamental understanding of emerging health threats and the development of initiatives that decrease vulnerabilities of communities and the ecosystems.

One Health is a particularly well-matched tool to advance the understanding of health threats from the direct and indirect impacts of climate change in the Arctic. As a multidisciplinary approach, One Health strengthens coordination between and among a wide range of scientific disciplines and stakeholders. By design One Health enhances participatory community-based approaches for identifying and responding to health issues in communities, which take into account local and traditional knowledge.

The Arctic provides an optimal opportunity for regional operationalization of One Health. As a concept, One Health is already evident in the Arctic and circumpolar north.^{xv,xvi} There is a strong history of local national, regional and international cooperation among diverse stakeholders in addressing human, animal and ecosystem health issues. Second, there are demonstrated programs and systems working in close collaboration that include multi-disciplined science communities, research institutes, academia, non-governmental agencies, the private sector, civil societies, native communities and other stakeholders.^{xvii,xviii} Arctic stakeholders are experienced at integrating collaborative scientific and policy development across disciplines, cultures and borders on health.^{xix} Third, networks are in-place that coordinate different aspects of Arctic health, ecosystem monitoring, animal and human disease surveillance and reporting.^{xx} Fourth, there is recognition of the need for an operational multi-disciplinary and holistic model for assessing all health risks.^{xxi} Finally there is a track record of policy makers receptive to, and influenced by scientific research from diverse scientific discipline.^{xxii} (See Table 1)

The Arctic international collaborations on policies, programs and initiatives have advanced the concept of One Health since human health became a specific focus for research in 1957 with the establishment of the Nordic Council committee for Arctic Medical Research. In 2010, the Sustainable Development Working Group created the Arctic Human Health Expert Group (AHHEG) for a human health perspective in addition to environmental issues. The Charter of the AHHEG is to advance collaboration between all stakeholders on integrated efforts to attendant human health issues with knowledge gained through ecosystem and community based research. In 2011, the Health ministries of the Arctic States issued the Nuuk Declaration, which describes the prioritized areas of concern and actions on health issues.^{xxiii} While One Health is not specifically identified, the declaration principles are aligned with the tenets of a One Health approach. Most recently, the International Circumpolar Working Group (ICWG) identified six activities to be established to strengthen the integration of animal and human health systems in order to minimize disease emergence in the Arctic.^{xxiv}

Over the past decades the concept of One Health has been iteratively advanced by Arctic stakeholders, scientists and policy makers. Paramount to advancing efforts for the early identification of health issues, implementing prevention programs and designing resilience strategies is evidence to support policy formulation. Operationalization of a One Health model will support advancement of the fundamental understanding of climate change vulnerabilities

and impacts in the Arctic health and provide an even stronger evidence base for developing decision making tools, frameworks and sound policies.

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