



EXECUTIVE SUMMARY

Strengthening A One Health Approach to Emerging Zoonoses

June 2022

An RSC Policy Briefing

Time for a Paradigm Shift

Leading up to the COVID19 pandemic, there was an acceleration of global zoonotic pathogen activity. It is now abundantly clear that we have established socioecological conditions that favour zoonotic pathogen amplification, spillover, spread, and disease. Yet, we continue to fail to recognize the interconnectedness among determinants of health for all animals¹, including humans, and ecosystems; the drivers of pathogen emergence; and the disproportionate impact of emerging zoonoses on racialized or economically disadvantaged people, women, and Indigenous communities.

One Health proposes a paradigm to address issues at the intersection of society, health, and the environment. The One Health view recognizes that the health of living beings and the land are interdependent. A collaborative approach to complex challenges, One Health highlights the need for diverse perspectives to identify potential actions that maximize health for all lands and animals, including humans.

Given the enormous global impact of the COVID-19 pandemic, greatly exacerbated by the intra-pandemic emergence of novel variants of concern (VOCs), and multiple, ongoing outbreaks of highly pathogenic avian influenza (HPAI) in Canada (Canadian Food Inspection Agency, 2022), there is a pressing need for a deeper understanding of the interface where humans and other animals interact in their shared environment, and the intersecting biological, ecological, and socioecological factors contributing to the emergence, spread, and impact of zoonotic diseases. The SARS-CoV-2 pandemic was heralded by international outbreaks of SARS-CoV in 2003 and Middle East respiratory syndrome coronavirus (MERS-CoV). However, significant pre-pandemic gaps persisted in coronavirus surveillance and research on coronavirus virology, ecology, and the development of medical countermeasures. We also failed to anticipate and mitigate the disproportionate impact of COVID-19 on marginalized populations at higher risk of exposure and severe disease; and, we did not predict the effect non-pharmaceutical interventions would have on health, education, and livelihoods. In brief, we did not embrace or sustain a One Health approach to viral zoonoses. These failures resulted from both a limited understanding of viral biology and drivers of emergence and disease, as well as from a lack of political will.

In Canada, there is a groundswell of One Health initiatives and a burgeoning community of practice. Leadership from the animal health and veterinary medicine sectors has been central to establishing One Health approaches to collaborative research, as well as curriculum and policy development in a range of sectors at regional and national levels. These sectors include academia, often seated

¹ Because *Homo sapiens*, or humans, are mammals, we often refer to *other animals* to distinguish them from humans. Where the term *animals* is used alone, we are generally implying non-human animals.

in faculties of veterinary medicine; federal government; and the private sector. Organizations focused on wildlife and global health such as the Canadian Wildlife Health Cooperative (CWHC) and the International Development Research Centre (IDRC) have longstanding connections to One Health, and some schools of public health and the environment are also actively engaged in One Health discourse.

A resilient and sustainable structure for a One Health approach must be tied to function and a clear One Health agenda for Canada, accompanied by established tasks, timelines, milestones, and support for execution. There is a need for diverse groups of policymakers and decision-makers to work together with other sectors of society in the design of programs and solutions, with active inclusion of community members and Indigenous knowledge holders and scholars.

Further inaction is not an acceptable option—radical change is desperately needed, beginning by reorienting our approach to health and recalibrating our perspectives to restore balance with the natural world in a rapid and sustainable fashion. In Canada, a major paradigm shift in how we think about health is required. All of society must recognize the intrinsic value of all living species and the importance of health of ecosystems and all animals to health for all. The priorities we set today will determine the future of generations to come; we are directly accountable to them for the decisions we make in this moment, a responsibility we can neither deny nor ignore. While many hope for a return to normal, we must remind ourselves of the predisposing factors that enabled this pandemic. This is a critical opportunity to address these complex factors. Health must be understood as a shared goal with other animals and the land, to ensure wellness for all.

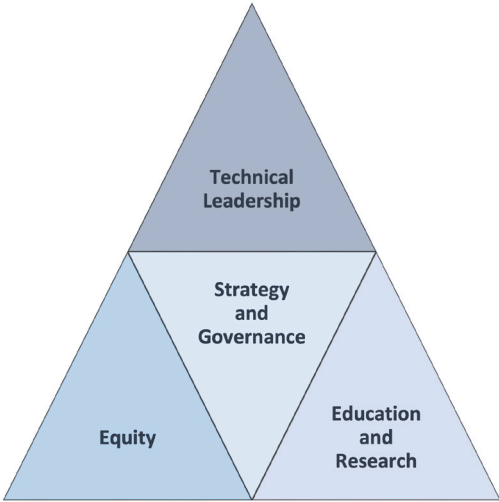


Figure 1. Framework for interconnected groups of recommendations.

Recommendations

Here we use a functional framework (Figure 1) of interconnected, but distinct groups of recommendations to facilitate review and framing for decision and policy makers. Urgent, time-sensitive recommendations are denoted with an asterisk (*).

Strategic Recommendations

By galvanizing and expanding One Health initiatives in Canada, there is excellent potential for a sustainable national strategy on One Health to emerge to ensure that One Health considerations are foregrounded for emerging zoonoses and other pressing issues such as climate change. Currently, there is no obvious government entity responsible for coordinating or supporting One Health in Canada. The following recommendations address current gaps in governance, spanning an inter-ministerial, all-of-government approach, biosecurity, international policy, and meaningful inclusion of an Indigenous knowledge framework.

- 1. *Establish a One Health Council to develop, coordinate and implement a One Health Action Plan for Canada with immediate focus on emerging zoonotic pathogens.** The Council must include experts and representatives from all relevant academic disciplines and ministries of the Government of Canada, as well as key non-governmental partners. The Council should be tasked with examining the policies, programs, and financial and

legislative support of agencies, organizations, and institutions related to One Health at the nexus of Canadian and Indigenous Peoples, domestic and wild animals, plants, ecosystems, and the economy and society, focusing initially on emerging zoonoses and drivers of zoonotic pathogen spillover.

2. **Appoint a Special Advisor on One Health** to the federal ministers responsible for health. In addition to providing advice, they would play a key role in the One Health Council.
3. ***Establish a Global One Health Security Office** which would be mandated to monitor and mitigate all manner of external biological threats to Canada, and with the Council, incorporate clear objectives for One Health into Canadian foreign policy to position Canada as a global leader and champion for global health and security, as part of a One Health Action Plan.
4. ***Develop and implement an Indigenous Engagement and Knowledge Policy Framework for One Health** and ensure that the One Health Action Plan accounts for and addresses the United Nations Declaration on the Rights of Indigenous Peoples and the Truth and Reconciliation Commission's Calls to Action. All levels of government must establish frameworks for inclusion of Indigenous Peoples Engagement and Knowledge systems in addressing One Health challenges.

Technical Leadership and Operational Recommendations

One of the principles of One Health is to leverage existing resources, tools, and programs. Many of these exist in Canada but have not been fully developed, implemented, or operated in a sustainable and coordinated fashion to (1) consistently generate accessible data for informed decision-making or (2) actively protect and nurture health and wellness for all animals (including humans) and the land. The following recommendations address technical and operational leadership around surveillance data collection and sharing, as well as critical programs for animal and land health.

5. ***Implement and sustainably fund the Pan-Canadian Approach to Wildlife Health**, as approved by all levels of Government in 2018. The Approach must be put into action immediately.
6. ***Expand and coordinate existing human, other animal, and environmental emerging pathogens surveillance and biomonitoring activities through Centres of Excellence in One Health** to generate health intelligence for decision-making and research by linking teams of scientists, diagnosticians, practitioners, epidemiologists, and public health experts to action surveillance data and other relevant data sources.
7. **Develop best practices for the collection, analysis, and sharing of surveillance data, and characterization of emerging pathogens.** Key activities must be underpinned by principles of biosafety and biosecurity. Scientists, diagnosticians, practitioners, epidemiologists, and public health experts must also collaborate to harmonize and share data, materials, and protocols.
8. **Commit to Other Effective Conservation Measures, Indigenous Protected and Conserved Areas, and Indigenous-led surveillance activities** while applying First Nations' ownership, control, access, and possession principles.

Equity Recommendations

The burdens of zoonoses and other challenges such as the climate crisis are not borne equally. When these disproportionately affect different communities, the impacts are often linked to pre-existing and systemic inequities. The exacerbation of various health inequities during the COVID-19 pandemic underscores the need for a comprehensive and inclusive approach, such as One Health. The following recommendations address some gaps in our understanding and commitment to underrepresented and over-affected populations.

9. **Engage community groups and communication scholars** to help devise better access to timely, effective, and trustworthy information to populations in situations of vulnerability.
10. **Collect consistent and disaggregated social and demographic health data** to identify health inequities to reduce the impact of emerging infectious diseases.
11. ***Ensure that Canada's commitment to social equality is advanced by applying gender-based analysis plus (GBA+)** to the analysis of all data, with meaningful inclusion of equity deserving groups, when developing interventions as part of a One Health Action Plan for Canada.

Education and Research Recommendations

The implementation of One Health curricula has been limited for One Health-related continuing education in medicine and other university faculties, learning environments, and public schools. In addition, One Health-focused research funding has been sparse in Canada, with few streams or review panels with the multi- or interdisciplinary perspectives and mixed-methods expertise to evaluate One Health research applications. Some priority announcements for One Health-related challenges have been supported, but these are primarily focused on human health, narrow in scope, limited in funding, and do not allow for wider-ranging One Health proposals, particularly for animal and ecosystem health. One Health education and research are essential to promoting awareness, advancing knowledge, and informing policy around complex challenges such as zoonoses. The following recommendations address some of the gaps in existing education and research programs for One Health in Canada.

12. **Develop and implement One Health curricula** for accredited health education programs for veterinarians, physicians, and other licensed healthcare providers and public health practitioners in training.
13. **Introduce One Health at all stages of education**, from preschool to university. Curricular and extra-curricular learning opportunities must be developed, and One Health topics introduced in professional continuing education programs.
14. ***Prioritize domestic and international research on emerging zoonoses using a One Health approach as part of Canada's One Health Action Plan.** This must include research activities across human, other animal, and ecological health from biological, ecological, epidemiological, social, environmental, Indigenous, governance, and policy perspectives.
15. **Provide sustained funding, including through the Tri-Agency, for One Health** through a net increase in available funding that supports collaborative biological, health, ecological, social sciences, and humanities research using a One Health approach through dedicated mechanisms. Panels must be multidisciplinary and capable of assessing projects using a One Health approach.

- 16. Embed research as a critical element of a Centres of Excellence in One Health program** (Recommendation 6). These centres would focus on generating scientific knowledge and health intelligence using a collaborative One Health approach, thus also training future One Health scientists, teachers, and decision-makers to inform policy and drive societal change.