



Advancing knowledge and increasing capacity to address climate-driven infectious diseases in Canada

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Abstract

The *Pan-Canadian Framework on Clean Growth and Climate Change* (PCF) was adopted in December 2016. This collaboratively developed federal, provincial and territorial report documents Canada's plans to meet its Paris Agreement commitments and stimulate Canada's economy. This PCF identifies a series of actions that will be addressed through four key pillars: pricing carbon pollution; complementary measures to reduce emissions; adaptation and climate resilience; and enabling economic growth through clean technology, innovation and jobs. Within the PCF, protecting and improving human health and well-being was included as an essential aspect of adaptation and climate resilience. New actions in the PCF included greater federal action to prevent illness from extreme heat events led by Health Canada and to reduce the risks associated with climate-driven infectious diseases led by the Public Health Agency of Canada (PHAC).

Public health and climate change intersect in the area of infectious disease. To deliver on its new commitments in the PCF, PHAC established the Infectious Diseases and Climate Change (IDCC) program, and a new grants and contributions fund. The program has three principal aims: to increase PHAC's capacity to respond to the increasing demands posed by climate-driven infectious diseases; to provide Canadians access to timely and accurate information to better understand their risks and take measures to prevent infection; and to improve the adaptability or resiliency to the health impacts of infectious diseases through surveillance and monitoring, increased laboratory diagnostic capabilities, and access to education and awareness tools. In the first year of the IDCC Fund, a number of projects on monitoring and surveillance and on education and awareness have been approved. In collaboration with our stakeholders as well as governments at all levels and in all provinces and territories, PHAC will continue to work to raise awareness about the effects of climate change on the prevalence of infectious diseases and help Canadians to prepare for the anticipated and unanticipated impacts.

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Introduction

In response to the recognized need to take action on climate change, Canada's First Ministers adopted the *Pan-Canadian Framework on Clean Growth and Climate Change* (PCF) in December 2016 (1). This collaboratively developed federal, provincial and territorial report documents Canada's plans to meet its Paris Agreement (2) commitments. The

provincial and territorial governments that support the PCF and the federal government have identified a series of actions that will be addressed through four pillars: pricing carbon pollution; complementary measures to reduce emissions; adaptation and climate resilience; and enabling economic growth through clean technology, innovation and jobs.

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The PCF recognizes that addressing climate change is a shared responsibility and that everyone—all levels of government, Indigenous organizations, communities, industry, non-government organizations and individuals across the country—have a role to play. The PCF includes more than fifty concrete actions on climate change, spanning all provinces and territories and all sectors. In addition, it also supports implementation of the 2030 UN Sustainable Development Goals (3).

Within the PCF, protecting and improving human health and well-being is included as an essential aspect of adaptation and climate resilience. Other action areas within this pillar included translating scientific information and traditional knowledge into action, building climate resilience through infrastructure, supporting particularly vulnerable regions and reducing climate-related hazards and disaster risks. The inclusion of health and well-being as a key component of the PCF acknowledged that the burden and impact on Canadian's health is anticipated to increase as changes in climate advance. Unfortunately, the vulnerable and at-risk populations may experience the brunt of these impacts from climate change. For this reason, new actions in the plan include greater federal action to prevent illness from extreme heat events and to reduce the risks associated with climate-driven infectious diseases as well as support to Indigenous communities and Nations to lead health activities.

Health Canada, the Public Health Agency of Canada (PHAC), the Canadian Institutes of Health Research, and its partners were also charged with continuing to advance the science, knowledge and best practices to adapt to climate change. PHAC has a long history of programming in this area and leads on the public health implications of climate change on infectious disease.

The objective of this article is to briefly highlight the role of public health in climate change adaptation and describe the new Infectious Disease and Climate Change (IDCC) program that PHAC has launched, which includes a new grants and contributions fund.

Public health and climate change

Public health plays an important role in raising awareness about the effects of climate change by equipping the public, health professionals, and decision-makers at various levels of government with tools and information to help Canadians to prepare and be more resilient to the impacts. The public health role in addressing climate change requires new partnerships, collaborations through multi-jurisdictional and multi-disciplinary actions.

Public health and climate change intersect in the area of infectious disease. One example of the direct and indirect effects of our changing climate on infectious disease and where our knowledge continues to evolve is vector-borne disease

risks. The shifting of the geographic range, habitats, and seasonality of vector-borne microbes is leading to the expansion of relatively rare infectious diseases to new areas and/or the emergence of diseases not previously present in Canada (4). Recent federal investments at PHAC within both the Centre for Food-borne, Environmental and Zoonotic Infectious Diseases and the National Microbiology Laboratory under the umbrella of the PCF have focused on building greater capacity and understanding to address climate-driven infectious diseases, including vector-borne diseases through enhanced surveillance and monitoring, risk assessments, modelling and laboratory diagnostics, as well as health professional education and public awareness activities (5). This investment reflects the realization that the toll of climate change and inadequate preparation for these changes could be tremendous.

PHAC's Infectious Diseases and Climate Change Program

To deliver on its new commitments in the PCF, PHAC established the IDCC program in 2016. The program builds on previous programming, the areas identified above, and will also help advance some work under the *Federal Framework on Lyme Disease and Action Plan* (6) and Lyme Disease Research Network grant process led by the Canadian Institutes for Health Research (7).

The focus of PHAC's program is on climate-driven zoonotic (including vector-borne diseases), food-borne and water-borne infectious diseases and includes a new grants and contributions fund. The program has three principal aims: to increase PHAC's capacity to respond to the increasing demands posed by climate-driven infectious diseases; to provide Canadians access to timely and accurate information to better understand their risks and take measures to prevent infection; and to improve the adaptability or resiliency to the health impacts of climate-driven infectious diseases through surveillance and monitoring, increased laboratory diagnostic capabilities and access to education and awareness tools.

In August 2017, PHAC launched the IDCC Fund, to provide up to \$2 million annually in grants and contributions funding for projects over 11 years. The Fund provides PHAC with a new vehicle to advance work in Canada on climate-driven infectious diseases and where possible, the One Health approach. Funds are being disbursed through directed, targeted and open solicitations. This Fund includes two priority areas:

- Monitoring and surveillance, and
- Education and awareness.

Surveillance activities will help establish baseline data and monitoring will facilitate better prediction and responses to climate-driven infectious diseases. This will be done by analyzing the movement of infectious diseases (e.g., viruses, bacteria,



parasites, fungi and prion diseases), particularly in underserved communities.

Education and awareness activities will include the development, uptake and/or distribution of materials for use by health professionals and the dissemination of tools and best practices across Canadian communities including vulnerable populations.

The projects that have received IDCC funding approval include health professional organizations, universities, Indigenous communities and provinces advancing work on the human health impacts of climate-driven infectious diseases. These PHAC funded projects will enhance baseline knowledge through field surveillance of tick populations, studies of infectious disease risks in specific regions of Canada and development of new tools, training and resources for health professionals, vulnerable populations, and communities. The announcement of the funded projects is pending.

PHAC is currently preparing for the next IDCC Fund solicitation process—planned for the fall of 2018—for projects to begin in 2019/2020, and for the future years of the program. More detailed information on the focus of this solicitation will be available on canada.ca and via email through program engagement.

Conclusion

The impacts of climate change are becoming more and more evident worldwide. In Canada, the provincial and territorial governments that support the PCF and the federal government have spelled out the critical steps required to respond to these changes. And, there is greater acknowledgement of the need to focus on health and well-being as part of our adaptation measures.

PHAC is committed to addressing the impacts of climate change on infectious diseases, and has identified gaps in knowledge and capacity that need to be addressed in order to better respond to current and future climate-driven increases in infectious diseases. To support the implementation of the PCF, PHAC continues to

increase its knowledge and expertise. It has put in place the new IDCC program that includes a grants and contributions fund.

PHAC will continue to work to advance knowledge and awareness of the effects of climate change and to help Canadians to prepare for and be more resilient to its impacts.

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