

Briefing for Health Care Practitioners

HEALTH OF CANADIANS IN A CHANGING CLIMATE: SCIENCE ASSESSMENT 2022

Overview

The report *Health of Canadians in a Changing Climate: Advancing Our Knowledge for Action* assesses the latest research and knowledge about the effects of climate change on health and health systems, populations most at risk, and effective adaptation measures to protect Canadians and their communities. The report evaluates the scientific evidence related to the following topics:

- Climate change and Indigenous Peoples' health
- Natural hazards
- Mental health and well-being
- Air quality
- Infectious diseases
- Water quality, quantity, and security
- Food safety and security
- Climate change and health equity
- Adaptation and health system resilience

Who is This Report For?

This report will support actions by health care practitioners such as physicians, nurses, nurse practitioners, paramedics, emergency dispatchers, home care workers, pharmacists, occupational therapists, athletic therapists, community support workers, and workplace health and safety personnel.



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Climate change is already affecting the health of Canadians

- Climate change has been a driver of recent health effects related to rising temperatures and extreme heat, wildfires, and the expansion of zoonotic diseases into Canada, such as Lyme disease
- Without greater adaptation efforts, projected increases in the frequency and severity of intense precipitation events, droughts, extreme heat, wildfires, and storms will directly affect health by causing more illness, injuries, and deaths
- Disruptions to food systems and water resources; worsening of air pollution; the emergence and re-emergence of climate sensitive infectious diseases, effects on mental health, and increasing demands on health systems will continue to threaten Canadians' health

Did You Know?

The number of days when the maximum temperature climbs over 30°C has increased in Canada by about one to three days annually from 1948 to 2016. Such extreme heat increases deaths in Canadian cities by 2% to 13%.

In 2021, extreme heat events in British Columbia were linked to an estimated 740 deaths.¹

Extreme heat can also increase hospitalization for cardiovascular problems and pregnancy complications, including premature birth, early delivery, miscarriage, and congenital abnormalities such as neural tube defects.

Wildfire smoke, which can spread over vast areas of the country, contributed to an estimated 620 to 2700 deaths annually in Canada from 2013 to 2018. The public health burden of wildfire smoke is expected to increase in the future due to climate change.

Warmer temperatures mean greater survival of exotic vectors once they are carried into Canada, making it more likely that the diseases they carry are transmitted here e.g., dengue, malaria, chikungunya, Zika). Surveillance shows an emerging population of *Aedes albopictus* mosquitoes, which are capable of transmitting dengue, in a very limited area of Southern Ontario.

In 2017, human cases of Lyme disease increased by over 1300% compared to cases in 2009.

The current burden of mental ill health in Canada is likely to rise as a result of climate change as mental health effects from acute hazards (e.g., post-traumatic stress disorder, psychosis, distress, suicide) increase along with longer-term, more generalized effects (e.g., eco-anxiety, eco-grief).

¹ Henderson, S.B., McLean, K.E., Lee, M., Kosatsky, T. (2021). Extreme heat events are public health emergencies. *BC Medical Journal*, 63(9), pg. 366-367. <https://bcmj.org/bccdc/extreme-heat-events-are-public-health-emergencies>



Climate variability and change is already impacting Canadian health care facilities:

- **Hotel-Dieu of St. Joseph Hospital, Perth-Andover, NB, 2012** – Flooding of more than 1 m of water resulted in the temporary closure of the hospital and the transfer of 21 patients to other facilities
- **Interior Health, BC, 2017** – Air quality warnings associated with wildfire smoke resulted in the temporary closure of 19 health care facilities. Over 800 patients had to be evacuated to other facilities
- **Eight health regions, QC, 2010** – A heat wave resulted in a 4% increase in emergency department admissions and a 33% increase in death rates for all health regions affected
- **Regina General Hospital, Regina, SK, 2007** – Operating theatres were closed for eight days due to high heat and humidity levels
- **Northern warming** – Rising temperatures are melting permafrost, requiring additional structural support for health care facility buildings

The Canadian health sector as a whole, primarily hospitals, pharmaceuticals, and physician services, is estimated to have emitted between 4.6% and 5.1% annually (29.6–33 Mt CO₂ equivalent) of total national GHG emissions from 2009 to 2014.

The impacts of climate change will affect Canadians differently

Some Canadians are affected more severely by climate change as exposure and sensitivity to hazards and the ability to take protective measures varies across and within populations and communities.

Some groups who may experience increased risk to the health effects of climate change include:

- First Nations, Inuit, and Métis peoples
- Racialized populations
- People of a low socio-economic status
- People experiencing homelessness
- People with pre-existing health conditions
- Children, seniors, and pregnant people
- Certain occupational groups (e.g., agricultural workers, people working outdoors and in the heat, first responders)

The effects of climate change can cause damage and disruption to health facilities, services, and operations

Health care infrastructure, operations, financing, and staff, along with public health programming, can be impacted by extreme weather shocks and by chronic stresses from longer-term warming, reducing access to and quality of care for Canadians.

Health facilities and services in rural and remote areas, and health systems that have not assessed and managed risks, face the greatest threats. Combining climate change hazards that can arise, for example, when extreme heat occurs with drought and a wildfire, can pose very severe risks to individuals and the health systems they rely on.

Adaptation measures can greatly reduce negative health impacts of climate change



Adaptation measures such as assessments of risks and vulnerabilities, integrated surveillance and warning systems, training of health professionals, emergency preparedness and response, and public education can help prepare Canadians and build the climate resilience of health systems.

Indigenous knowledges can inform climate change and health-related decision-making at a variety of levels to benefit diverse stakeholders, including researchers, decision makers and community members.

Box 10.2: Improving the climate resilience of Texas Medical Centre

Texas Medical Centre (TMC) in Houston is the largest medical complex in the United States, comprising 23 hospitals. In 2001, this medical complex experienced very severe impacts from Tropical Storm Allison, a historic thousand-year flood, which caused 22 deaths, cost almost 5 billion USD in damage to the county, and resulted in a complete power outage due to damage to emergency generators and electrical switchgear. It also led to more than 1000 patients being evacuated and 2 billion USD in research losses.

After the devastation caused by Tropical Storm Allison, TMC hospitals came together to invest 50 million USD in measures to enhance the resilience of their facilities, including a new flood alert system, improved disaster mitigation planning, and creation of flood management groups. In addition, infrastructure upgrades were undertaken, such as installation of a new on-site combined heat and power plant to eliminate dependence on the city's energy grid and elevation of power service to reduce the risk that it would be flooded. Since the upgrades, TMC was struck by Hurricane Rita in 2005, Hurricane Ike in 2008, and Hurricane Harvey in August 2017. In all of these storms, the medical complex escaped the devastating impacts felt in 2001 that so greatly affected patients and staff. In fact, during record-breaking Hurricane Harvey, all TMC hospitals and emergency rooms remained operational, although the storm flooded the Houston area.

Source: Health Care Without Harm, 2018



Health practitioners can play a vital role in addressing the health risks of climate change

- Increase awareness and knowledge of the health-related impacts of climate change, including symptoms and effective patient treatment:
 - For example, the risk of vector-borne and zoonotic diseases is increasing in Canada. Health care practitioners should be familiar with symptoms, diagnosis, and treatment options for these diseases
- Provide patients with information on the health risks related to climate change:
 - For example, educate patients on signs of heat-related illness and how to store medication properly in extreme heat
- Improve service delivery during and after climate-related hazards like serve storms:
 - For example, determine how clinics and other health care facilities will manage staffing shortages during an emergency and develop plans to ensure access to critical medical supplies
 - Include plans for keeping staff safe, monitoring staff well-being, and caring for staff who might be injured as part of broader emergency preparedness planning
- Implement measures to reduce the GHG emissions of clinics, offices, and other health care facilities to enhance resilience

How to Use the National Assessment Report

Health care practitioners can use the national assessment report and supporting materials in a variety of ways:

- The findings can be used to understand and identify the health risks related to climate change as well as provide information on protective actions that Canadians can take
- The infographics and fact sheets can be shared with other health professionals and community partners to enhance understanding of climate change impacts on the health of Canadians and health systems



Helpful resources

- [Health of Canadians in a Changing Climate: Science Assessment 2022 – Factsheets and Decision maker Briefings](#)
- [Health of Canadians in a Changing Climate: Communication Products](#)
- [Climate Change Toolkit for Health Professionals](#)
- [Canada’s Changing Climate Report](#)
- [WHO Guidance for Climate-resilient and Environmentally Sustainable Health Care Facilities](#)

Source

Berry, P., & Schnitter, R. (Eds.). (2022). [Health of Canadians in a Changing Climate: Advancing our Knowledge for Action](#). Ottawa, ON: Government of Canada.

