Changes in climate are affecting the health of Canadians and their health systems. Recent floods, wildfires, extreme heat events, and severe storms have impacted health facilities, disrupted health care, impacted public health programming, and placed increased pressure on the health workforce.

Health systems and facilities can be vulnerable to climate change impacts in several ways. For example:

- Health care officials, including first responders, can be affected physically and suffer mental health impacts from extreme weather and disaster events
- Health infrastructure, such as building envelopes, can be damaged or destroyed by wind storms, floods, wildfires, and extreme heat events
- Reduced access to critical support services, including transportation, power, water supply, and telecommunications, can affect the normal operations of a health care facility
- Medical and non-medical supplies and services (e.g., medications and medical products, blood services, food, linen and site cleaning, waste disposal storage and services, data management and patient record systems, and sterilization services) can be disrupted by severe weather events in or even outside of Canada
- During disasters, increased hospital admissions and emergency services in health facilities can create stress on operations, particularly where surge capacity is lacking
Impacts of Climate Variability and Change on Canadian Health Systems

Alberta Health Services, AB. 2013. Unprecedented precipitation led to evacuations from, and damage to, a number of hospitals, emergency medical services, facilities, physician offices and urgent, continuing, and long term care sites.

Slave Lake Healthcare Centre, Slave Lake, AB. 2011. 29 patients evacuated from the hospital due to wildfire.

Interior Health, BC. 2017. Wildfires resulted in facility closures, patient transfers and Very High Health Risk air quality warnings from the smoke.

St. Joseph’s General Hospital, Comox, BC. 2014. Heavy rainfall resulted in boil water advisory lasting 47 days. Hospital purchased water, required additional labour, and enhanced communication with staff and patients.

Regina General Hospital, Regina, SK. 2007. Operating theatre closed for 8 days due to high heat and humidity levels.

Sunnybrook Health Sciences, Toronto, ON. 2013. Power grid failure from the ice storm lasted 39 hours. Six infants in Neonatal Intensive Care Unit were relocated.

Royal Victoria Hospital, Barrie, ON. 2019. Breakdown of air conditioning during period of high heat and humidity resulted in cancellation of 130 surgeries, patient transfers and re-sterilization of medical equipment and linens.

Eight health regions in Quebec. 2010. July heat wave resulted in 4% increase in emergency department admissions and 33% increase in crude death rate for regions affected.

Hotel-Dieu of St. Joseph Hospital, Perth-Andover, NB. 2012. Flooding resulted in temporary closure of hospital; 21 patients transferred to other hospitals.

Nova Scotia Health Authority, NS. 2019. Hurricane Dorian caused power outages at hospitals and service locations, which had to operate on an emergency generator. Sites experienced water damage, temporary closures, and cancellation of appointments.

Interior Health, BC. 2017. Wild/uniFB01res resulted in facility closures, patient transfers and Very High Health Risk air quality warnings from the smoke.

Slave Lake Healthcare Centre, Slave Lake, AB. 2011. 29 patients evacuated from the hospital due to wildfire.

(Berry et al., 2022)

Adaptation by health authorities with collaboration of decision makers in other sectors can help prepare Canadians and enhance the climate resilience of health systems

Adaptation measures to reduce impacts

Many health authorities are not prepared for the impacts of climate change. A survey in 2019 showed that only 56% are undertaking surveillance and monitoring of the health impacts from hazards related to climate change; 35% have undertaken a vulnerability and adaptation assessment for climate change and health and 21% report that they have a climate change and health adaptation strategy. Rapidly scaling up activities to reduce risks to health systems can help avoid severe health outcomes for Canadians.

Preparing the health workforce

In 2019 less then a quarter of public health authorities in Canada provided climate-informed training for public health professionals. Educating health sector workers about the impacts of climate change, the needs of people most at risk, and measures to prepare for climate emergencies help to build resilience.
Raising awareness and educating partners and the public

Health professionals have a primary role in raising awareness of the growing risks of climate change to Canadians and are a trusted source of information that can be effective in influencing behaviours. Educating individual Canadians and engaging decision makers in other sectors like transportation, energy, water, urban planning, and agriculture will support the rapid transformation of communities and health systems to greater climate resilience.

Health sector leadership in reducing its carbon footprint and increasing resilience

The Canadian health sector as a whole, primarily hospitals, pharmaceuticals, and physician services, is estimated to have emitted between 4.6% and 5.1% of total national GHG emissions (29.6–33 Mt CO₂ equivalent) annually from 2009 to 2014. Well-designed efforts to adapt to climate change impacts and reduce GHG emissions within the health sector can result in very large and near-term co-benefits to health. They also enhance the ability of infrastructures, operations, and staff to withstand current and future impacts of climate change.

First Nations, Inuit, and Métis peoples face unique challenges in accessing health care, including culturally safe care. Inadequate health human resources, high staff turnover, low population density, geographic remoteness, jurisdictional conflicts over health care provision, lack of health and/or transportation infrastructure, increased travel costs, and a deficit of information on Indigenous Peoples’ health to inform evidence-based practices all present significant challenges. Climate resilience can be increased to reduce future impacts by drawing on local, Indigenous, and scientific knowledges to develop climate change responses that meet needs in locally specific contexts and build the capacity of the health sector and emergency response systems.

To address challenges in adapting, Canadian health authorities have greater knowledge and tools to make progress preparing health systems for climate change impacts.

Efforts are needed to address the unique challenges facing First Nations, Inuit, and Métis peoples and health systems in Canada.
Health Adaptation Path and Progress

1. **Awareness building phase**
   - Awareness of climate change risks to health and need to adapt

2. **Leadership and partnering**
   - Learning, information sharing and course correction

3. **Groundwork adaptation phase**
   - Building capacity to adapt
     - Identifying best practices, conceptual/analytical tools
     - Adaptation and assessment guidance
     - Health adaptation plans
     - Networking and information sharing
     - Integrated risk monitoring and surveillance
     - Vulnerability and adaptation assessment
     - Climate and health research

4. **Concrete adaptation phase**
   - Implementing concrete adaptation options
     - New/upgraded infrastructure and technology
     - Communication campaigns
     - Health workforce training
     - Emergency preparedness and management
     - Climate-informed health programmes, policies, standards, guidelines, regulations
     - Management of social and environmental determinants of health
     - Climate and health financing
     - Indigenous health systems and communities
   - Analyzing health co-benefits and risks
   - Analyzing health facility resilience

5. **Measuring and evaluating progress**

6. **Iterative risk management phase**
   - Vulnerability and adaptation assessment

**Source**