

Health Care Facility Climate Change Resiliency Checklist

April, 2013



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Introduction

The World Health Organization has called on the health care sector to prepare for climate change impacts through efforts to increase resiliency. Health care organisations in Canada can increase resiliency by continually mainstreaming climate change into risk assessments, considering climate change when developing plans and activities and engaging in broader community discussions and initiatives around climate-related issues. For example, health care and public health professionals and staff, can prepare for climate change by assessing risks from extreme weather events, readiness to manage climate-related infectious disease outbreaks or atypical cases and increasing understanding of how gradual shifts in weather can affect risk profiles. Health care facilities can reduce risks of climate change through proper management of critical resources (e.g. pharmaceuticals, food, transportation, medical supplies and equipment) based on climate change considerations. A resilient health care facility is also one that commits to sustainable practices, such as water and energy conservation, promoting active transportation, and local food procurement. In investing in resiliency activities in these areas, health care facilities can reduce operating costs and increase resilience in the community.

The Canadian Coalition for Green Health Care with support from the Nova Scotia Department of Environment and Health Canada has co-developed a *Health Care Facility Climate Change Resiliency Toolkit* that health care facilities can use to assess their resiliency to climate change. The toolkit includes a checklist with questions in many areas, such as: emergency management, facilities management, health care services and supply chain management. Completion of the assessment checklists by officials with knowledge and experience in these areas will increase awareness and inform resiliency activities.

For further information on the toolkit or to receive a copy, please contact:

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Scientific Backgrounder

Scientific evidence indicates that climate change poses risks to the health of Canadians and to health care facilities through increased warming, altered weather patterns and increased climate variability (Seguin, 2008). Many of the impacts are already being felt (Lemmen and Warren, 2008). Future climate change is expected to increase health risks associated with:

- Extreme weather events that are more frequent, intense, of longer duration, and that have greater spatial extent in communities across Canada (e.g., extreme heat events, storms, floods, droughts, freezing rain events, wildfires, land-shifts)
- Increased UV radiation and personal exposures as warming continues
- Increased air pollution (e.g., smog, particulate matter (PM), aeroallergens) in some parts of Canada
- Increased food-borne and water-borne contamination (recreational and drinking water)
- Introduction, expansion or re-emergence of rodent and vector-borne infectious diseases (e.g., Lyme disease, West Nile virus etc.), including exotic diseases
- Exacerbation of health challenges faced by vulnerable populations such as seniors, children, Aboriginal groups, people with chronic diseases, and persons of low socio-economic status

Climate variability has impacted health facilities in past events (e.g., Eastern Canada Ice Storm, 1998; Hurricane Juan, 2005) and will continue to pose risks to health care facilities in the future (World Health Organization, 2012). Extreme weather associated with climate change can damage hospital infrastructure, disrupt power supplies, compromise the availability of critical resources and place greater demands on health care staff. Infectious disease outbreaks and food and water contamination incidences can place added pressures on health care facilities and affect patient safety.

The *Health Care Facility Climate Change Resiliency Toolkit* was developed to help health care facilities become more resilient to climate-related risks.

Health Care Facility Climate Change Resiliency Checklist

General Information

Please complete the general questions below. All persons who complete the checklist should complete question 1. Please select the appropriate person(s) to respond to questions 2-4 in this section.

1. Please record your name and role at your health care facility and the date you completed the checklist.

Name	Role	Area of Work*	Date
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			

Examples: emergency management, facilities management; health care services, supply chain management, food and nutritional services, waste management etc.

2. In the community that your health care facility services, what is the approximate size of the population? _____

3. What types of services does your health care facility provide?

- Emergency and Ambulatory Care
- Teaching and Research
- Acute Inpatient Care
- Continuing Care
- Rehabilitation
- Specialized (e.g. trauma center, children’s hospital, geriatric hospital), please specify:

- Specialist Units / Departments (e.g. emergency, cardiology, intensive care, palliative care, neurology, oncology, obstetrics and gynecology), please specify:

4. How many patients does your health care facility provide services to:

- Number of Inpatient beds: _____
- Average Daily Emergency Department Visits: _____

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Introduction

Climate change poses risks to health care facilities in Canada. To help hospitals assess their resiliency to climate-related risks, a toolkit has been developed for use by health care facility officials. The toolkit includes a checklist which addresses resiliency to climate change in many areas, such as emergency management, facilities management, health care services and supply chain management. It has been developed for senior level official(s) who are knowledgeable in these areas.

Instructions

This checklist includes closed and open-ended questions. For each question in the checklist, please respond using the spaces provided. You may require additional resources when responding to questions.

Please use the following answer key to help guide your responses:

- “Yes” indicates commitment to action. Action needs to be completed or in progress.
- “Somewhat” indicates that action is planned but concrete action has not yet been taken.
- “No” indicates that no action is planned or that no action has been taken.
- “I don’t know” indicates that not enough information is available to respond.

After each question, there is a text box for comments. Please use this space to provide additional information. For example, you may wish to document discussion points, reasoning for responses and / or to indicate if others should be consulted to help answer the question.

ASSESSING CLIMATE RELATED RISKS

Assessing risks to inform emergency management and risk reduction strategies

1. Current and future climate variability and change can pose a variety of risks to people and infrastructure that could affect continuity of care at your health care facility. Please indicate if your health care facility considers the following climate-related hazards when conducting risk assessments.

Climate risk	Yes	Somewhat	No	I don't know	This is not a risk for my region
a. Extreme heat					
b. Extreme cold					
c. Extreme rain and snowfall					
d. Drought					
e. Wildfire					
f. Extreme weather – tornado					
g. Extreme weather – freezing rain, ice storm, hailstorm					
h. Extreme weather – thunderstorm, lightning					
i. Extreme weather – hurricane and related storms					
j. Extreme weather – avalanche, rock-, mud- and landslide, debris flow					
k. Poor air quality and smog					
l. Food-borne contamination and/or diseases					
m. Water-borne contamination and/or diseases					
n. Vector-and rodent-borne diseases					
o. New and emerging infectious diseases					

COMMENTS: _____

2. For hazards listed in the table in the last question that you responded “yes” or “somewhat” to, is future climate variability and change considered when assessing risk levels?
- Yes
 - Somewhat/Sometimes
 - No
 - I don't know

COMMENTS: _____

3. Climate change is expected to create new risks or exacerbate existing risks to health care facilities in Canada. A resilient health care facility undertakes risk assessments to inform risk reduction activities. Are risk assessments carried out at your health care facility?
- Yes
 - Somewhat
 - No
 - I don't know

COMMENTS: _____

4. Increasing resilience to climate change is an iterative process. Resilience today does not provide a guarantee that a facility will be resilient in the future under changing weather patterns. When identifying hazards that could pose a risk to your health care facility, is uncertainty around changing weather patterns, including future climate variability (e.g. use of future climate projections), considered?
- Yes
 - Somewhat
 - No
 - I don't know

COMMENTS: _____

5. Does your health care facility consider how gradual or indirect climate-related risks (e.g. sea-level rise, drought or famine in other countries, resources (food, water, energy) availability and / or prices) may affect future vulnerabilities or risks to your health care facility?
- Yes
 - Somewhat
 - No
 - I don't know

COMMENTS: _____

6. National and regional assessments of climate-related hazards are conducted approximately every 5 years and can provide useful information for health facility assessments. How often are risk assessments at your health care facility carried out (or revisited and updated)?
- Every year
 - Every 2-5 years
 - Every 6-10 years
 - Never
 - I don't know

COMMENTS: _____

7. Are considerations of current and future climate variability discussed explicitly when risk assessments are carried out, revisited or updated?
- Yes
 - Somewhat / Sometimes
 - No
 - I don't know

COMMENTS: _____

8. Information about climate change and its impacts is growing and changing. A resilient health care facility has staff knowledgeable and aware of climate change and how it may impact your health care facility. Do officials at your health care facility actively seek out opportunities (e.g. supporting conferences, strengthening partnerships with knowledgeable experts) to obtain information about climate - related risks that could inform risk management activities? Please respond for the various health care facility job types below:

Health care facility officials	Yes	Sometimes	No	I don't know	Not Applicable
a. CEO of health care facility					
b. Emergency management					
c. Facilities and maintenance					
d. Food and nutritional services					
e. Front-line health care staff					
f. Procurement and supplies					
g. Waste management services					
h. Environmental services or sustainability services					
i. Other					

COMMENTS: _____

9. Climate change resiliency requires communication among multidisciplinary stakeholders and inclusion of a climate change lens when assessing risks. When ranking risks to your health care facility, do the following individuals or groups regularly participate or provide information?

Stakeholders	Yes	Sometimes	No	I don't know
a. Persons knowledgeable about climate change				
b. Climatologists, meteorologists				
c. Multidisciplinary health care facility team (e.g. officials from different areas of the hospital)				
d. Community partners (e.g. police, paramedics, fire, public health, Canadian Red Cross)				
e. Other health care facilities in the region				
f. International (e.g. World Health Organization, International Panel on)				

Climate Change, United States Centers for Disease Control)				
g. Federal Government (e.g. Public Health Agency of Canada, Health Canada, Public Safety Canada)				
h. Province (e.g. Ministry of Health, Department of Emergency Management)				

COMMENTS: _____

10. A resilient health care facility is dependent in part on the climate resiliency of the broader community. Climate variability may create risks in your community that can affect your health care facility. The community may have limited capacity to cope and certain vulnerability factors (e.g. institutional, demographic, socio-economic) factors may increase future risks. When conducting risk assessments, does your health care facility receive and exchange information about risks in the community (e.g. vulnerability of infrastructure, critical resources, vulnerability of the population) from knowledgeable community partners?

- Yes
- Somewhat / Sometimes
- No
- I don't know

COMMENTS: _____

11. It is important that health care facility officials are aware of current and future climate-related risks in the community. Do staff from your health care facility regularly participate on community disaster planning committees (e.g. when emergency management or community vulnerability assessments are undertaken)?

- Yes
- No
- Sometimes
- I don't know

COMMENTS: _____

12. If you answered yes to the last question, do community planning committees discuss potential climate change risks that may affect the ability of health care facilities in your community to provide care to people in the short and long-term (e.g. during and post-disaster)?

- Yes
- No
- I don't know

COMMENTS: _____

13. It is important to update emergency plans as new knowledge on climate risks become available, for example, if new climate-related risks are identified. Are emergency management plans updated using results from risk assessments?
- Always
 - Sometimes or to some degree
 - Never
 - I don't know

COMMENTS: _____

14. As the health care system changes over time, so to could the capacity of your facility to manage hazards related to climate variability and change. When assessing current and future climate-related risks to your health care facility, are the following factors that affect capacity to continue to provide care considered?

Resiliency factor	Yes	Sometimes	No	I don't know
a. Access to critical supplies and resources (e.g. transport of supplies)				
b. Establish adequate stock piles of resources				
c. Manage surge capacity				
d. Ability to receive alerts and warnings, undertake surveillance and monitoring (e.g. of health burdens)				
e. Ability of staff to effectively diagnose and treat patients in the short and long-term				
f. Capacity to evacuate patients				

COMMENTS: _____

Assessing risks to infrastructure and systems

15. Climate change is expected to increase the frequency and / or intensity of climate-related hazards (refer to hazards listed in question 1) in Canada. Currently is the infrastructure of your health care facility able to withstand climate-related emergencies and able to provide safety for patients, staff and visitors?
- Yes
 - No
 - Sometimes
 - I don't know

COMMENTS: _____

16. Consider all of the climate-related hazards that are a risk in your region (refer to table in question 1). When conducting risk assessments, is damage to your facility from an acute emergency *and* from gradual degradation included?

- Yes
- No
- Somewhat
- I don't know

COMMENTS: _____

17. The ability of a health care facility to continue to provide care in a changing climate is in part dependent on the infrastructure and system elements that provide a safe and healthy hospital environment. Is information about the vulnerability of your facility's infrastructure and systems to current and future climate variability and changing weather patterns continually included in hospital facility risk assessments?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

18. If yes, please indicate if considerations of how climate variability and change may affect the following facility elements is regularly included.

Vulnerability area	Yes	Sometimes	No	I don't know
a. Heating, ventilation, air conditioning system (e.g. chillers, window units, redundancy of systems such as connection to back-up power)				
b. Potable and non-potable water systems (e.g. cooling towers)				
c. Electricity supply from the local service provider or alternative energy sources (e.g. electricity, back-up generators, fuel supply, redundancy of systems)				
d. Functioning of machines, equipment and computers (e.g. equipment to diagnose and treat patients, surgical equipment, computers that store medical records)				
e. Communication channels (e.g. telephones, computers)				
f. Structural elements (e.g., pillars, floors, roofs)				
g. Non-structural elements (e.g., windows)				

COMMENTS: _____

19. A resilient health care facility conducts regular maintenance checks of infrastructure and systems (including equipment) to be robust against changes in climate. Does your health care facility regularly conduct maintenance checks, according to Accreditation Canada standards and/or building codes?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

RISK MANAGEMENT TO REDUCE CLIMATE-RELATED RISKS

20. Climate variability and change are expected to create new risks and exacerbate existing risks in the future. Does your health care facility continue to ensure that the following risk management elements are accounted for and adequate?

Resiliency activity	Yes	Sometimes	No	I don't know
a. Establish health care facility chief executive officer (CEO) buy-in to support emergency management activities and projects to improve the robustness of your facility?				
b. Secure funding for the implementation of emergency measures to increase resiliency to future climate-related emergencies (e.g. have a budget for emergency preparedness, or to improve redundancy or robustness of infrastructure or systems)				
c. Ensure that there are staff dedicated to emergency or disaster management activities and facilities operations and maintenance				

COMMENTS: _____

21. Climate variability and change are expected to increase emergencies related to the hazards listed in question 1. Emergency management programs need to be robust to reduce climate-related emergency risks. Please consider emergency management (or disaster planning) activities at your health care facility. Are the following items included in your emergency management activities?

Resiliency activity	Yes	Somewhat	No	I don't know
a. Specification of whom at the health care facility is accountable for the emergency management (or				

disaster planning) program [or equivalent]				
b. Specification of leadership and roles and responsibilities (lines of authority) for emergency management (or disaster planning) activities				
c. Emergency management (or disaster planning) hazard identification, risk assessment and analysis of response capabilities				
d. Emergency management (or disaster) plan to guide emergency response protocols and procedures in the event of an emergency or disaster				
e. Inclusion of emergency colour codes in emergency or disaster response plans				
f. Support for the development and implementation of emergency management (or disaster) plans and protocols				
g. Exercises, evaluations and updating of the emergency management (or disaster) program				
h. Collaboration and coordination with other health care facilities in the community				

COMMENTS: _____

22. An all hazards approach is often used by health care facilities to respond to multiple different hazards. If your health care facility implements an all hazards approach to manage emergencies, does the approach incorporate considerations of how future climate variability and change may affect risk management?
- Yes
 - Somewhat
 - No
 - I don't know

COMMENTS: _____

23. Climate-related events affect the health of patients, staff and visitors and may also impact availability or access to resources (e.g. power, water, food, supplies, and drugs). Consider the hazards listed in question 1. Does your facility have plans or protocols for the hazards that pose a risk in your region?
- Yes
 - Somewhat
 - No
 - I don't know

COMMENTS: _____

24. Many health care facilities rely upon color codes to inform responses to an emergency. Whether your facility uses this system or a different one, is the emergency response system sufficient to guide responses to climate-related emergencies?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

25. Climate change is expected to lead to longer periods of hot weather and more extreme heat events across Canada. Does your health care facility implement the following responses during an extreme heat event?

Resiliency activity	Yes	Somewhat	No	I don't know	This is not a risk for my region
a. Advise staff to closely monitor early indicators of heat illnesses and initiate appropriate treatment (check patient and room temperature, monitor fluid intake and output, pulse rate, and blood pressure)					
b. Consider indoor/outdoor temperatures when planning group activities					
c. Increase frequency of patient observations, especially of those at high risk					
d. Review clinical management of patients and residents most at risk either due to reduced mobility, chronic illnesses (pulmonary, cardiovascular, renal), and certain medications, social isolation, inadequate housing, or environmental factors (e.g. urban heat island, air pollution)					

COMMENTS: _____

26. Climate-related events may cause power-disruptions to occur at your health care facility. Does the emergency plan for your health care facility include actions to prevent or reduce health risks during a power-outage?

Resiliency activity	Yes	Somewhat	No	I don't know
a. Secure and maintain generators and sufficient fuel supplies				

b. Ensure generators will function (e.g. fuel pumps are protected)				
c. Cool patients during extreme weather when there is no air conditioning				
d. Closely monitor and assist patients who are particularly vulnerable (e.g. infants, children, elderly)				
e. Secure adequate amounts of safe food for patients, staff and visitors				
f. Secure adequate amounts of safe water (e.g. for drinking, cooling systems, diagnostic and medical treatment)				
g. Secure and protect patient records				
h. Access needed pharmaceuticals				

COMMENTS: _____

27. Contingency planning may become increasingly important for health care facilities with climate change if extreme weather results in more critical system (e.g. communications, electrical systems, water supply, resource supply, staff availability) disruptions or failures. Does your health care facility develop contingency plans if critical resources are limited or unavailable due to a climate-related emergency?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

28. Do officials representing your facility collaborate and coordinate with other health care facilities in your community to discuss risk management activities (e.g. determine lines of authority in an emergency)?

- Yes
- Somewhat
- No
- I don't know

29. Evacuations may be required if extreme weather damages a facility or creates conditions such that a hospital cannot deliver health care services. Does your health care facility include a regional approach to managing disasters if evacuations of 2 or more hospitals or facilities are necessary?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

30. In recent years, health care facilities in North America have been impacted by extreme weather events and will continue to be impacted by climate-related hazards. Health care facilities can learn from each other by sharing lessons learned and best practices. Does your health care facility collect best practices and lessons learned from other health care facilities that have experienced climate-related disasters?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

31. Climate change may increase infectious disease risks in Canada by affecting the distribution and abundance of disease vectors and disease pathogens that can be transmitted to people. Does your health care facility implement strategies to reduce climate-related infectious diseases risks? Please specify the strategies used below.

Resiliency activity	Yes	Sometimes	No	I don't know
a. Implement routine risk reduction strategies (protection, cleaning, disinfection, sterilization)				
b. Undertake routine risk assessments (screening patients, client symptoms) to identify patients who may be infected				
c. Implement policies regarding routine hand hygiene				
d. Ensure that health care staff are aware of climate-related disease risks in your region (e.g. West Nile Virus, Lyme Disease, Encephalitis)				
e. Educate health care staff, patients and visitors on how to reduce risks of infectious diseases at the health care facility				
f. Regularly incorporate new information (e.g. best practices from government or accreditation bodies) on infectious disease risk management into plans and protocols				

COMMENTS: _____

32. A climate-related emergency may affect waste management practices at your health care facility. Does your health care facility have a contingency waste management plan if primary waste management processes are limited or unavailable in an climate-related emergency scenario?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

33. Does your health care facility disaster plan include a protocol to receive external assistance from outside partners (e.g. other health care facilities, community, provincial agency, federal agency) in the event of climate-related emergency?

- Yes
- No
- I don't know

COMMENTS: _____

34. Does your health care facility have an evacuation plan to protect patients from a climate-related emergency or disaster?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

35. Are training exercises and drills to evaluate and validate disaster plans carried out at your health care facility regularly?

- Yes
- Sometimes they are carried out, but not regularly
- No
- I don't know

COMMENTS: _____

36. If yes or sometimes, do the exercises include consideration of, or scenarios based upon climate related risks and hazards?

- Yes
- Sometimes
- No
- I don't know

COMMENTS: _____

37. Do you participate in activities (e.g. drills, committee meetings, planning exercises) in the community that enhance your ability to respond to a community wide, climate-related disaster?

- Yes
- No
- I don't know

COMMENTS: _____

38. Is the broader community (e.g. fire, police, paramedics, public health) or persons knowledgeable about climate-related risks (e.g. climate experts) consulted, engaged, considered or invited to contribute when your health care facility's emergency management program is tested, evaluated and updated?

- Yes
- Sometimes
- No
- I don't know

COMMENTS: _____

39. Directly after a climate-related emergency or disaster, opportunities exist to raise awareness of climate change impacts and to plan and implement actions to be more resilient to future climate-related events. Please indicate if your health care facility takes advantage of this opportunity via the following initiatives.

Resiliency activity	Yes	Somewhat	No	I don't know
a. Develop after action reports that include how to be more resilient to climate-related emergencies or disasters in the future				
b. Secure financial relief to respond to immediate needs (e.g. repair damages, care for patients, reimburse staff)				
c. Allocate disaster relief funds towards activities that increase resiliency (e.g. training, increase supplies, strengthen back-up systems)				
d. Allocate disaster relief funds towards activities that increase redundancy or robustness (e.g. making your health care facility safer from climate-related disasters)				
e. Seek out information or learn from others about how to reduce future risks from a				

similar type of event				
f. Other (please specify): _____				

COMMENTS: _____

40. This question is for officials who manage emergency response protocols. Please consider if a climate-related disaster were to affect your health care facility tomorrow. Please indicate for each item below, how confident you are in the ability of the staff at your health care facility to respond effectively.

Resiliency activity	Highly confident	Somewhat confident	Little confidence	Not confident
a. Assessing the incident situation accurately and efficiently				
b. Notification of staff and leaders in a timely manner				
c. Taking charge promptly				
d. Mobilizing staff promptly and effectively				
e. Determining if an emergency operations centre (EOC) is required in a timely manner				
f. Develop an incident action plan driven by clear objectives in a timely manner and that includes a clear and accurate assessment of the situation and contingencies to determine objectives, resources and actions				
g. Identifying resource requirements and assign roles and responsibilities effectively and timely				
h. Implement an operational business cycle that clearly specifies how key personnel involved in the emergency response meet to exchange information, identify issues, and set objectives and to expand the emergency management personnel and resources required as necessary				
i. Effectively demobilize and transition to recovery				

COMMENTS: _____

Procurement of Health Care Resources and Supplies

41. Procurement of health care resources and supplies is critical for any health care facility to provide care. Climate variability and change may affect access to these resources (e.g. stockpiles and/or delivery or transport of supplies) that may be contingent upon weather conditions or that may be affected by extreme events. This includes “just in time delivery” of supplies in emergency situations.

At planning venues with community partners, do you discuss how institutional changes in combination with climate variability might affect delivery and/or access to health care resources or supplies?

- Yes
- Somewhat / Sometimes
- No
- I don't know

42. In a disaster situation, hospitals must be self-sufficient for up to 72 hours. Please indicate if your health care facility considers the following factors when managing quantities of supplies.

Climate-related risk	Yes	Somewhat	No	I don't know
a. Increased frequency of climate-related events				
b. Increased intensity of climate-related events				
c. Multiple climate-related events occurring in close succession				
d. Cumulative impacts from one or more climate related event(s) and other pressures (e.g. non-climate-related emergency)				
e. Other (please specify): _____				

COMMENTS: _____

43. One or more climate-related emergencies or disasters may affect critical resources at your health care facility. Do you currently have sufficient (according to accreditation standards for a health care facility of your size and type of care) essential supplies and resources to continue to provide care during one or more climate-related emergencies? Please respond according to essential back-up supplies listed below.

Vulnerability area	Yes	Somewhat	No	I don't know
a. Medications, treatments, drugs, pharmaceuticals, vaccines, antibiotics				
b. Medical equipment and technical devices				
c. Food				
d. Water				
e. Energy / Power				
f. Non-medical materials / supplies to care for patients (e.g. bed linens, cleaning supplies)				
g. Other (please specify): _____				

COMMENTS: _____

44. Climate change may cause more water restrictions in your community, triggering a need to invest in water savings initiatives. Does your health care facility have protocols to secure back-up supplies of water in the event of a water related emergency?
- Yes
 - Somewhat
 - No
 - I don't know

COMMENTS: _____

Notifications, Monitoring, and Surveillance

45. A climate resilient health care facility is aware of factors that contribute to the burden of illness in the community and contributes to reducing burdens associated with climate change. This can be achieved in part by building strong relationships with public health agencies and other agencies which provide key information about risks to Canadians. Does your health care facility take any of the following actions to regularly communicate and exchange information with external partners?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know
a. Establishes a reliable system to monitor and receive information about climate related hazards in the community (e.g. extreme weather, water and food safety, or new and emerging infectious diseases) to inform implementation of appropriate plans and protocols				
b. Provides surveillance data of health outcomes from extreme weather (e.g. health burdens associated with heat, cold, severe storms) to health agencies				
c. Provides surveillance data on reportable illnesses related to climate change (e.g. water-borne diseases, food-borne illness cases) to health agencies				
d. Share information about outbreaks or increased caseloads with other health care facilities in the community				
e. Other (please specify): _____				

COMMENTS: _____

46. Please indicate if your health care facility receives notifications of weather warnings, alerts, advisories (e.g. air quality alerts, food recalls or disease outbreaks, boil water advisories, water-use restrictions) or monitors weather conditions for the following hazards:

Climate risk	Yes	Somewhat	No	I don't know	This is not a risk for my region
a. Extreme heat					
b. Extreme cold					
c. Extreme rain and snowfall					
d. Drought					
e. Wildfire					
f. Extreme weather – tornado					
g. Extreme weather – freezing rain, ice storm, hailstorm					
h. Extreme weather – thunderstorm, lightning					
i. Extreme weather – hurricane and related storms					
j. Extreme weather – avalanche, rock-, mud- and landslide, debris flow					
k. Poor air quality and smog					
l. Food-borne contamination and/or diseases					
m. Water-borne contamination and/or diseases					
n. Vector- and rodent-borne diseases					
o. New and emerging infectious diseases					

COMMENTS: _____

47. Monitoring and surveillance of climate-related health outcomes is important to track burden of health from a changing climate and to provide evidence based information to inform health programs. In collaboration with your public health department, does your health care facility monitor and/or carry out surveillance activities for health outcomes associated with the following climate-related hazards? This question may require consultation with public health officials; if so, please indicate this in the comments field.

Climate risk	Yes	Somewhat	No	I don't know	This is not a risk for my region
a. Extreme heat					
b. Extreme cold					
c. Extreme rain and snowfall					
d. Drought					

e. Wildfire					
f. Extreme weather – tornado					
g. Extreme weather – freezing rain, ice storm, hailstorm					
h. Extreme weather – thunderstorm, lightning					
i. Extreme weather – hurricane and related storms					
j. Extreme weather – avalanche, rock-, mud- and landslide, debris flow					
k. Poor air quality and smog					
l. Food-borne contamination and/or diseases					
m. Water-borne contamination and/or diseases					
n. Vector- and rodent-borne diseases					
o. New and emerging infectious diseases					

COMMENTS: _____

Clinical Risk Management

48. Are there mechanisms in place to ensure that staff at your health care facility have knowledge of new or emerging health risks from climate change (e.g., extreme heat events, vector-borne diseases) in your area and of treatment options?

- Yes
- No
- I don't know

COMMENTS: _____

49. Do the response and recovery plans for climate-related emergencies or disasters include the provision of psychological support to address mental health impacts of patients, health care facility staff and visitors in the short term and long-term?

- Yes, programs are in place to address mental health needs of patients for the short term only
- Yes, programs are in place to address mental health needs of patients for the long-term only
- Both of the above
- No
- I don't know

COMMENTS: _____

50. Are health care staff informed or trained on how to treat the most vulnerable patients in your facility to the various climate-related hazards and how to care for the most vulnerable patients in a climate-related emergency (e.g. infants, children, and elderly)?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

51. Does your health care facility use promotional messages to help protect people from climate related hazards (e.g. air quality health index, sanitary measures to prevent diseases, what to do in extreme heat events)

- Yes
- Somewhat / Sometimes
- No
- I don't know

COMMENTS: _____

52. In Canada, agencies may issue smog alerts or poor air quality alerts when air quality is poor and could affect the health of people in your community. Some municipalities have adopted the “Air Quality Health Index” which provides information to the public about health outcomes based on the level of pollutants in the air. A climate resilient hospital takes measures to protect the health of patients, staff and visitors on poor air quality days. Does your health care facility take any of the following measures to protect health from poor air quality?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know
a. Cancel non-essential services on smog days				
b. Develop and update protocols to protect the health of patients most vulnerable (e.g. respiratory diseases, cardiovascular diseases, children, elderly) to poor air quality				
c. Provide information and notify patients if air quality is poor and how to respond appropriately (e.g. as per guidance by your public health department)				
d. Implement energy use restrictions on smog days				
e. Other (please specify): _____				

COMMENTS: _____

Infrastructure and Systems Risk Management

53. Do maintenance procedures of your health care facilities’ systems and infrastructure include specifications on how weather may affect the safety of your facility?

- Yes
- Somewhat
- No
- I don’t know

COMMENTS: _____

54. Are the individuals responsible for maintenance of your health care facilities’ systems and infrastructure adequately trained to manage a climate-related emergency or disaster (for examples of climate-related hazards, please refer to the hazards listed in question 1)?

- Yes
- Somewhat
- No
- I don’t know

COMMENTS: _____

55. Climate variability and change may gradually increase risks to facility infrastructures and systems. For example, water or air quality may worsen in your region and infrastructure may degrade more rapidly over time. Is regular maintenance of your health care facility carried out to address the following climate-related risks?

Climate-related risk	Yes	Sometimes	No	I don’t know
a. Water-borne contamination (e.g. impacting water for food services, drinking water, water for diagnostics and medical treatment, leading to growth of biological pathogens in water systems)				
b. Indoor air quality issues from heat or weather that lead to growth of biological pathogens or other toxic contaminants (e.g. chemicals that result from degradation of non-organic material)				
c. Air quality issues arising from a wildfire or smog event				
d. Damage to structural and non-structural elements from extreme weather				
e. Energy disruption from the local service provider or alternative energy sources				

COMMENTS: _____

56. Does your health care facility invest in infrastructural upgrades or redundancy measures to make your facility more resilient to extreme weather or longer-term gradual impacts from climate change (e.g. moisture build up, sea level rise)?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

57. If you answered yes or somewhat to the last question, has your health care facility allocated resources or invested in any of the following areas to make your health care facility more resilient to weather and related emergencies?

Vulnerability area	Yes	Sometimes	No	I don't know
a. Heating, ventilation, air conditioning system (e.g. chillers, window units, redundancy of systems such as connection to back-up power)				
b. Potable and non-potable water systems (e.g. cooling towers)				
c. Electricity supply from the local service provider or alternative energy sources (e.g. electricity, back-up generators, fuel supply, redundancy of systems)				
d. Functioning of machines, equipment and computers (e.g. equipment to diagnose and treat patients, surgical equipment, computers that store medical records)				
e. Communication channels (e.g. telephones, computers)				
f. Structural elements (e.g., pillars, floors, roofs)				
g. Non-structural elements (e.g., windows)				

COMMENTS: _____

58. Does your health care facility have plans in place to address response and recovery issues related to areas listed in the question above?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

59. Hotter summers and longer periods of hot weather could have cost implications for your health care facility, for example, if air conditioning units will need to run at higher intensities and for longer periods of time. Do you consider how future climate variability, increasing utility or energy costs could affect costs to run equipment when developing future plans, strategies and programs (e.g. when investments are made)?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

60. If a climate-related emergency or disaster damaged your facility, is there a process to access sufficient funding to repair damages and return to normal operating capacity?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

Energy supply and use

61. Climate change may result in more power outages in your community which may result in increased frequency and / duration of power disruptions at your health care facility. Does your health care facility have an emergency energy (e.g. electricity, natural gas) plan?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

62. In a climate-related emergency involving a power outage at your health care facility, does your facility have back-up power sources available to supply electricity to critical areas of your facility (e.g. medical equipment, light fixtures, or critical areas according to Accreditation Canada standards, or other legislative codes or policies)?

- Yes
- Somewhat

- No
- I don't know

COMMENTS: _____

63. In Canada and in general, climate variability and change will lead to longer periods of hot weather and more extreme heat events. Cold related storms (ice-storms) and cold-snaps may persist. In the event of a power outage, does your facility have back-up power sources available to supply electricity used for heating and cooling health care facility building(s)?

- Yes
- Somewhat
- No
- I don't know

COMMENTS: _____

64. Does your facility take the following actions to increase the ability of back-up energy systems to provide power in a climate-related event or emergency? Please respond to the items below.

Resiliency activity	Yes	Sometimes	No	I don't know
a. Regularly test back-up energy generation systems				
b. Secure readily available back-up supplies of fuel for generators				
c. Conduct exercises to test staff readiness to protect generators / ensure generators function properly				
d. Secure access to resources required to respond adequately to a power-outage (e.g. maintenance staff, supplies for cleaning up flood waters)				
e. Determine if back-up generators, pumps and all other necessary back-up energy supply equipment are in a flood area, and if so – relocate or protect				
f. Determine ahead of time which areas of the facility can be powered down and / or are non-critical when power is limited				

COMMENTS: _____

BUILDING CAPACITY TO ADAPT TO CLIMATE CHANGE

Sustainable Health Care and Climate Change Mitigation

65. A climate resilient health care facility recognizes and commits to sustainable practices that benefit the hospital and broader community. Examples of areas of sustainable management include energy efficiency, water conservation, environmentally responsible purchasing and food system sustainability. Does your health care facility undertake any of the following measures to be more sustainable?

Resiliency Action	Yes	Somewhat / Sometimes	No	I don't know
a. Establish health care facility chief executive officer (CEO) and senior management support and buy-in				
b. Develop sustainability goals and action plans				
c. Secure funding for the implementation of sustainability measures				
d. Build awareness among staff, patients and visitors of the importance of being a sustainable health care facility				
e. Track sustainability performance (e.g. by identifying indicators of performance measurement, conducting a sustainability assessment, setting targets)				
f. Implement strategies and activities to continuously improve sustainable management				
g. Learn about new ways to be more sustainable (e.g. by assessing sustainable practices of suppliers, how to implement energy efficiency activities)				
h. Assess and revise sustainability strategies to incorporate new information and improve efforts to reach targets or achieve goals				
i. Build partnerships in the community with likeminded organizations or agencies to contribute to a resilient community				
j. Seek out funds for sustainability initiatives				
k. Undertake or invest in research on sustainable practices				
l. Report sustainability results to the public				
m. Other (please specify): _____				

COMMENTS: _____

66. Many jurisdictions in Canada have begun to address climate change by developing climate change plans and undertaking vulnerability assessments. Some of these initiatives may have roles for health care facility or information that is pertinent to them. Is your health care facility aware of climate change adaptation or mitigation initiatives in your jurisdiction and how your health care facility could be involved?

- Yes
- Somewhat / Sometimes
- No
- I don't know

COMMENTS: _____

67. Does your health care facility have an energy efficiency program? Please respond using the following scale:

- 1-Yes, an exemplary (e.g. award winning) program is in place _____
- 2-Yes, a mediocre program is in place, but could use more resources/time _____
- 3-Somewhat, but the program has limited resources and could be improved _____
- 4-No _____
- 5-I don't know _____

COMMENTS: _____

68. Energy efficiency programs may include a variety of initiatives. Energy efficient initiatives contribute to resiliency by reducing future climate-related health risks (through greenhouse gas emission reductions) and reducing reliance on energy on a regular basis (to be better prepared when power supply is disrupted). Does your health care facility capitalize on any of the following energy-related resiliency opportunities? Please respond to the items below.

Resiliency activity	Yes	Sometimes	No	I don't know
a. Conduct energy audits				
b. Set energy or greenhouse gas reduction targets				
c. Monitor or track energy use				
d. Evaluate energy reduction strategies				
e. Monitor cost-savings, greenhouse gas emission reductions				
f. Educate staff, patients and visitors about energy reduction strategies (energy awareness campaigns), perhaps as part of an energy conservation program				
g. Design buildings using green design best practices (e.g. Leadership in Energy and Environmental Design), standards or guiding principles				
h. Install energy efficient equipment				
i. Install lighting control systems to minimize energy consumption (e.g. lights shut off automatically or are not used during daylight hours or in areas of the facility unused)				
j. Investigate the possibility of diversifying energy sources in your health care facilities jurisdiction (e.g. solar power, photovoltaic power, hydro-electric)				

k. Capitalize on energy use reduction incentive programs				
l. Design building according to local environment (e.g. considers natural landscape, slope of land, direction of the sun, whether building is located on a flood-plain) to reduce energy consumption				

COMMENTS: _____

69. A climate resilient health care facility contributes to community efforts to improve local air quality. Does your health care facility take any of the following measures to contribute to improving air quality in your community?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know
a. Learns about air quality initiatives in the community to identify its role in improving local air quality				
b. Avoids the use of toxic chemicals whenever possible (e.g. in cleaning products and in products used in the hospital such as flooring and furniture)				
c. Plants greenery inside and outside the hospital				
d. Support local suppliers to reduce transportation mileage for supply delivery				
e. Supports (e.g. through policies or promotional messages) mass transit (public transit), carpooling or car sharing				
f. Supports (e.g. through policies or promotional messages) active transportation (walking, biking) as an optimal method of transport when it is safe to do so (e.g. if air quality is good, if it is not an extreme heat day)				
g. Implements tele-health (telephone or virtual patient encounters) wherever possible (especially if hospital is in a remote location)				
h. Learns how to minimize transport related emissions by understanding how the facilities location / design impacts transportation uses				
i. Other (please specify): _____				

COMMENTS: _____

70. Does your health care facility have a water conservation program? Please respond using the following scale:

- 1-Yes, an exemplary (e.g. award winning) program is in place _____
- 2-Yes, a mediocre program is in place, but could use more resources/time _____

- 3-Somewhat, but the program has limited resources and could be improved _____
- 4-No _____
- 5-I don't know _____

COMMENTS: _____

71. A water conservation program could include a variety of initiatives. A climate resilient hospital takes measures to protect its water supply and to conserve water which benefits the community. Has your health care facility adopted any of the following water conservation related strategies?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know	Not Applicable
a. Conduct a water-use audit					
b. Track or monitor water-use for performance measures					
c. Evaluate water reduction strategies					
d. Monitor cost-savings of water use reduction strategies					
e. Increase awareness about water conservation and reducing water use in the facility among staff, patients and visitors					
f. Implement water conservation practices in medical treatments (e.g. water-efficient machines and equipment such as dialysis)					
g. Install of low-flow shower heads					
h. Install of low-flush toilets					
i. Implement water conservation practices in laundering services					
j. Implement water conservation practices in landscape development and maintenance activities					
k. Collect rainwater for use in the hospital (e.g. irrigation)					
l. Educate staff, patients and visitors about water reduction strategies (water conservation awareness campaign)					
m. Other (please specify): _____					

COMMENTS: _____

72. Does your health care facility have a sustainable (e.g. recycling program) waste-management program? Please respond using the following scale:

- 1-Yes, an exemplary (e.g. award winning) program is in place _____

- 2-Yes, a mediocre program is in place, but could use more resources/time _____
- 3-Somewhat, but the program has limited resources and could be improved _____
- 4-No _____
- 5-I don't know _____

COMMENTS: _____

73. Sustainable waste-management programs could include a variety of initiatives. Minimizing waste production can have co-benefits (cost-savings, environmental benefits, health benefits) and contributes to a climate resilient health care facility. Has your health care facility adopted any of the following sustainable waste management strategies?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know
a. Audit all waste streams: general waste, biomedical waste, and liquid and hazardous waste				
b. Conserve and reduce resources (i.e. reducing food-service waste, optimize use of surgical kits)				
c. Purchase re-usable products and products that minimize waste production from vendors and suppliers				
d. Establish effective waste segregation practices to reduce waste sent for incineration on or off-site				
e. Waste segregation to minimize biomedical waste				
f. Compost food service waste				
g. Maximize recycling of waste where possible				
h. Alternative disposal and treatment technologies (e.g. anaerobic digestion of organic wastes, with recovery of materials and combustion of biogas)				
i. Other (please specify): _____				

COMMENTS: _____

74. Reducing (resource conservation), re-using and recycling contribute to a climate resilient health care facility because of environmental and health benefits in the short and long-term. Does your health care facility reduce, re-use and recycle in any of the services listed below?

Health care service or unit	Yes	Somewhat	No	I don't know
a. Patient Care / Wards				

b. Laboratories				
c. Administrative Areas				
d. Patient Services: Diagnostic				
e. Patient Services: Clinics/Therapeutics				
f. Patient Services: Intensive Care Areas				
g. Common Areas				
h. Building and Medical Support Services				
i. Food Services and Cafeteria (food served for public or consumers)				
j. Kitchens (food preparation for patients)				
k. Other (please specify): _____				

COMMENTS: _____

75. Does your health care facility have an environmentally responsible purchasing program? Please respond using the following scale:

- 1-Yes, an exemplary (e.g. award winning) program is in place _____
- 2-Yes, a mediocre program is in place, but could use more resources/time _____
- 3-Somewhat, but the program has limited resources and could be improved _____
- 4-No _____
- 5-I don't know _____

COMMENTS: _____

76. An environmentally responsible purchasing program could include a variety of initiatives. Health care facilities can contribute to a climate resilient community by investing in environmentally responsible purchasing that can help reduce greenhouse gases and air pollution. Does your health care facility undertake any of the following environmentally responsible purchasing activities?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know
a. Have a "green" / sustainable procurement policy				
b. Implement purchasing audits across departments / units to inform how purchasing can be more sustainable				
c. Collaborate with vendors or suppliers on strategies for how to reduce packaging and reduce un-needed supplies (i.e. surgical kit reviews)				
d. Purchase reusable products instead of the disposable products whenever possible				

e. Adopt green procurement protocols to screen all products for environmental benefits and alternatives using third party certified labeling programs such as EcoLogo, Green Seal Energy Star and EPEAT to guide selections where possible				
f. Learn about how purchasing can influence environmental and human health and builds awareness at the hospital				
g. Other (please specify): _____				

COMMENTS: _____

77. Does your health care facility have sustainable food program? Please respond using the following scale:

- 1-Yes, an exemplary (e.g. award winning) program is in place _____
- 2-Yes, a mediocre program is in place, but could use more resources/time _____
- 3-Somewhat, but the program has limited resources and could be improved _____
- 4-No _____
- 5-I don't know _____

COMMENTS: _____

78. Sustainable food programs could include a variety of elements. Does your health care facility undertake any of the following sustainable food activities?

Resiliency activity	Yes	Somewhat / Sometimes	No	I don't know
a. Diversify food suppliers to include local food vendors				
b. Consider the feasibility of establishing on-site food gardens (e.g. greenhouse, roof top gardens) perhaps to raise awareness on the importance of using local food sources or to contribute to greening hospital landscape				
c. Procure local (as per your own definition) seasonal foods				
d. Participate in community initiatives that support farmers markets				
e. Communicate with food vendors about the desire to procure sustainable food products and assess vendors using sustainability criteria (e.g. organic, locally grown, seasonal products, vegetarian items)				
f. Other (please specify):				

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COMMENTS: _____