

Strengthening Health Care Resilience to Climate Change: An Assessment of Acute Care Facilities' Resilience to Extreme Events

Executive summary

MOTIVATION:

Hospitals and emergency care facilities play a critical role during and following an extreme event, such as flooding or an earthquake. Besides treating mass casualties and those with health conditions exacerbated by the extreme conditions, health care facilities may also be relied upon to provide shelter and supplies for surrounding communities.

There is strong evidence that the intensity, frequency, geographic extent, and unpredictability of extreme weather events are increasing with the warming climate. Of particular concern in BC, flood risk in the Lower Mainland is projected to worsen with extensive damage and disruptions to essential services, including medical services. The extensive impact can dramatically increase the burden on the health care system through unprecedented patient surge, disruption to access supply, power and water, to name a few. This can severely undermine patient and staff wellbeing, and debilitate facilities without adequate preparedness. Furthermore, many major hospitals in BC were established more than 40-50 years ago. It is timely to re-examine both their ability to remain resilient in the changing face of extreme events and their role in mitigating climate-related disease burdens by reducing emissions that contribute to climate change.

In response, Health Emergency Management BC (HEMBC) and Lower Mainland Facilities Management (LMFM) are partnering on a multi-phased project to develop adaptation action plans at facility-level to holistically strengthen the climate resilience of health care facilities in the Lower Mainland.

PROJECT OBJECTIVES AND METHOD:

As a sustainability scholar, my role was to design and conduct the first of multiple phases of this project, which aims to provide a first glance at the current state of our facilities' resilience to extreme events in order to identify priority areas before conducting more detailed assessments that will shape the site-specific adaptation plans. As a pilot project, 5 acute care facilities were assessed with the following specific objectives:

- ✓ Identify the types of hazards each site and its associated community are exposed to
- ✓ Assess each site's level of resilience to extreme events
- ✓ Identify risk and gaps to address with a view to strengthening both physical and social resilience
- ✓ Recommend specific actions to address each identified risk and gap

To address those objectives, 6 major steps were taken:

1. Review existing climate resilience assessment tools for healthcare facilities and select the one that is most suitable for the project's purpose
2. Customize the selected assessment tool for the BC context and include additional important elements



3. Develop assessment site selection criteria to consider; conduct high-level hazard exposure assessments of all acute care facilities in Lower Mainland; and, select 5 acute care facilities accordingly
4. Engage with Executive Director and Vice president at HEMBC and LMFM respectively for sponsorship and additional support through Environmental Sustainability Advisory Committee.
5. Conduct questionnaire-based resilience assessments with multiple stakeholders and experts at each facility. Stakeholders include representatives from:
 - o Facilities, maintenance and operations
 - o Emergency Management
 - o Energy Management
 - o Capital Planning
 - o Risk Management
6. Verify, contextualize, and supplement the assessment results through facility visits to interview facility staff members from various departments (e.g. food services, medical records, pharmacy)
7. Analyze assessment results from all 5 facilities to identify risks that are common to most facilities and those that are facility-specific, and identify specific actions that can be taken to address each risk.
8. Prepare a detailed report documenting the project's motivation, approach, results and next steps

RESULTS AND NEXT STEPS:

Risks, gaps and actions were identified in 5 aspects of the facilities: a) structural (e.g. building envelope), b) non-structural (e.g. utilities and assets), c) operational (health service delivery), d) sustainability (e.g. emissions and waste reduction) and e) climate risk preparedness (e.g. using up-to-date climate projections in planning). While some risks and actions were applicable to all five sites, some are unique to certain facilities and driven by their respective local challenges (e.g. geographically remote, facility and equipment age, local community demographics). The resilience assessment tool used in this project effectively and systematically covered all major aspects of resilience at the facility level. However, the facility visits and interviews with multiple stakeholders were found to be invaluable in providing context and details that are critical to the development of tractable and comprehensive adaptation actions plans.

Although recommended actions were identified, their feasibility, priority level and practical implementation tasks and challenges are still to be assessed and will vary by facility. This will be addressed in the next project phase through stakeholder workshops at each facility.

Given that the health care sector is highly dependent upon critical infrastructure (e.g. electricity, water, transportation), the rest of the project will facilitate coordination and collaboration between the 5 facilities and those infrastructure partners. Being the first in Canada to simultaneously assess health care facilities' structural, non-structural and operational resilience to extreme events, using the findings in this project to develop explicit adaptation plans is an opportunity for BC's healthcare system to position itself as a leader in helping the nation prepare for climate change and protecting their community's well-being.

