For the Chief Public Health Officer of Canada's Report on the State of Public Health in Canada 2023

Creating the Conditions for Resilient communities: A Public Health Approach to Emergencies

Generating Knowledge for a

Health Promotion Approach to Emergencies

A Companion Report by the Public Health Agency of Canada's Chief Science Officer, Dr. Sarah Viehbeck, and her Office

Public Health Agency of Canada
Agence de la santé publique du Canada

Canada

La version française est également disponible sous le titre : *Générer des connaissances pour une approche de promotion de la santé en matière d'urgences.*

Suggested citation: Public Health Agency of Canada. Generating Knowledge for a Health Promotion Approach to Emergencies. Ottawa, ON: Public Health Agency of Canada; 2023.

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Publication date: November 2023

Cat: HP5-172/2023E-PDF
ISBN: 978-0-660-68668-4
Pub: 230549

Note about the report's cover design:

The cover page design was inspired by the health promotion emblem created by the World Health Organization (WHO) and used at the First International Conference on Health Promotion held in Ottawa, Canada, in 1986. Since then, the WHO has used the emblem to represent the approach to health promotion as outlined in the *Ottawa Charter for Health Promotion*. Further details on the meaning of the WHO health promotion emblem can be found here.

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Introduction

In the 2023 annual report on the state of public health in Canada, *Creating the Conditions for Resilient Communities: A Public Health Approach to Emergencies*, Dr. Theresa Tam, Canada's Chief Public Health Officer (CPHO), explores how public health can work with communities and partners across sectors to build healthier, more resilient communities that are better equipped to prevent, withstand, and recover from emergencies. As the Public Health Agency of Canada's (PHAC) focal point for science excellence, science promotion, and science-policy integration, the Chief Science Officer developed this companion document with the objective of mobilizing knowledge generation and research aligned to the CPHO report's recommendations.

This document outlines knowledge gaps and research needs to bridge the science-to-policy divide, catalyze collaborative scientific activity, and provide the evidence base to support the application of a health promotion approach to emergency management in Canada. It is geared toward a broad audience, including individual researchers, organizations, funding agencies, and communities wishing to mobilize research action aligned with recommendations shared in the CPHO report.

The priority knowledge gaps and research needs presented in this document were informed by the recommendations outlined in the CPHO report, a review of the scientific and grey literature, and from the engagement of subject matter experts (see Appendix B for detailed methodology). Experts were asked to identify the most pressing research questions or activities needed to advance the implementation of health promotion approaches to public health emergency management in Canada. This includes science and research activities that can help to **build healthy public policy** by exploring the role of policy-making and broader social systems in influencing the determinants of health; **create supportive environments** by exploring the conditions of daily life that foster good health and community resilience; and **strengthen community action** by exploring the roles, contextual factors, and impacts of the connections between community members, leaders, public health, and emergency management planners. Characterizing these elements of health promotion according to this framework aligns with the concepts outlined in this year's CPHO report.

The priorities presented in this document reflect the specific knowledge gaps and research needs identified at the intersection of health promotion and emergency management as key public health functions. They represent concrete, actionable opportunities to generate new evidence, increase our understanding, and to better inform public health preparedness and response by promoting equity, addressing the structural determinants of health, and bolstering community resilience. They do not constitute an exhaustive list of all science and research needs in emergencies.

Science and Research in Emergencies

Science and research are essential components of a credible, evidence-informed public health system. Evidence generated through well-designed, effectively executed scientific activities (including population-based data generation, primary studies, knowledge syntheses, or program or policy evaluations) and the incorporation of science advice in emergencies are integral to achieving the goals of better emergency management, preventing injury, illness, disability and death, and supporting recovery.[1-7]

Efficient, coordinated activities across the spectrum of Canada's science and research ecosystem are required to identify, fund, and address pressing needs, and for the timely provision of the best available evidence and expertise to public health decision-makers for uptake and action.[8] Experts consulted in the development of this document identified specific evidence gaps around **what should be studied**, and also frequently emphasized the necessity of a paradigm shift in **how science is funded, conducted, and used in emergencies** and how that could benefit from a health promotion approach. Examples of opportunities to this end included:

- Developing methodologies to meaningfully bridge intersectoral siloes and enhance collaboration;
- Prioritizing community co-development and leadership in science and research activities;
- Exploring the meaning and interpretation of health promotion to different community groups and populations within the context of emergencies;
- Employing a distinctions-based approach to engaging and empowering communities, with particular attention to First Nations, Inuit, and Métis communities;
- Engaging diverse voices, sources of expertise, and Indigenous ways of knowing as a standard practice; and,
- Seizing opportunities to learn from past public health emergencies to enhance mechanisms and infrastructure for science advice and knowledge translation to decision-makers, public health authorities, and the public.

Priority Knowledge Gaps and Research Needs

The priority knowledge gaps and research needs synthesized in this document are the product of an iterative mixed methods approach (see Appendix B). Priorities are grouped according to key thematic areas and feature additional expert-identified recommendations on specific topics to be addressed. Additionally, the ten priorities with highest concurrence across all respondents, and across those that self-identified their ability and expertise to speak to First Nations, Inuit, and/or Métis (FNIM) research priorities are indicated.

Addressing these knowledge gaps and research needs may be achieved through a diversity of approaches. The knowledge gaps and research needs are not intended to privilege specific methodological approaches or research designs.

Upstream Drivers and Determinants of Health

- Understand social, economic, and structural drivers of inequities and their impact on the health outcomes and health behaviours of different populations during public health emergencies.
- Explore how supportive environments can be fostered, shaped, and sustained to increase community resilience to emergencies (e.g., through evaluating efforts to foster social cohesion, social infrastructure, and community action during disruption).
- Explore and evaluate how emergency management efforts can address upstream drivers of inequities.

Systems-Level Approaches to Health Promotion in Emergencies

- Explore how governance models, governmental and/or institutional structures, politics, policies, and programs hinder or enable community action during emergencies.
  Specific topics may include:
  - Exploring effective governance models that enable community leaders and emergency management professionals and structures to work together effectively.
  - Exploring risk communications for emergency management, by investigating facilitators and barriers to two-way communication mechanisms that affect response efforts in particular communities.
  - Exploring facilitators and barriers to a whole-of-government approach to health promotion in emergencies.
  - Exploring ways that incident command systems can partner with communities and be more inclusive of priority populations.
- Explore how public health systems promote community resiliency, equity, and address the varying needs of different population groups in emergency preparedness and response.

Unintended Impacts of Emergencies and Emergency Interventions

- Explore unintended outcomes of emergency response interventions on the practices and well-being of First Nations, Inuit, and/or Métis communities and other priority populations (e.g., land use, ceremony, community gathering) to mitigate adverse impacts.
  Specific topics may include:
  - Understanding how the protection of kinship ties during evacuations and emergency responses enhances community resilience and buffers from harm.
- Explore the health impacts (physical, social, mental, and well-being) of public health emergencies on the health workforce, including unpaid caregivers, community volunteers, and other essential workers.
- Monitor the long-term impacts on physical, mental, social, and cultural health after emergencies and the trajectory of recovery, including the ongoing needs of affected communities.
  Specific topics may include:
  - Exploring the impacts of exposure to risk factors of disease and injury, access to new technologies, access/barred access to cultural sites, and traditional food resources.
  - Exploring the impacts and trajectories of recovery in communities with adequate resources and community infrastructure to support resilience relative to communities that do not.
- Explore the unintended outcomes of emergency response interventions, including but not limited to evacuation and social isolation, on social structures, social stigma, mental health, and physical and social well-being.
  Specific topics may include:
  - Exploring the short, medium, and long term impacts of emergency management on the psychosocial development and education of children and adolescents.
  - Understanding residual psychological and social changes caused by public health emergencies on social cohesion and the extent to which emergencies contribute to societal disruption and how best to counteract these effects.

Assessing Resources to Support Social Infrastructure, Resilience, and Community-Centred Approaches

- Explore how public health service provider networks can be strengthened and/or how services, technologies, resources, and social protection measures that promote health, mental health, and well-being can be allocated and delivered to meet specific priority groups' needs during public health emergencies.
- Identify the health and public health assets, resources, and service needs and emergency management needs of First Nations, Inuit, and/or Métis communities in reserve, urban, rural, remote, and Northern settings, focusing on community priorities related to health, mental health, and well-being.
- Explore the economics of public health emergencies, financing models, and economic policies to support a community-centred approach to emergency management. *Specific topics may include:*
  - Exploring how financial and non-financial resource allocation to community organizations enable community action and resilience to emergencies.

Prioritizing Community Engagement and Local Knowledge to Foster Co-Development

- Explore how governments, multilateral agencies, civil society, and community groups can build lasting trust and reduce communities' vulnerabilities to mis- and dis-information.
  Specific topics may include:
  - Evaluating public health risk communication strategies and structures to support public trust and confidence throughout all stages of the emergency management continuum.
  - Exploring how the use of pre-existing and well-established partnerships between community members and emergency management systems affect the response to emerging health threats and the building of public trust.
- Explore meaningful, ethical, and sustainable approaches to co-develop emergency management actions with communities.
  Specific topics may include:
  - Understanding the impacts of intergenerational trauma and institutional experiences (e.g., residential schools, tuberculosis sanitoriums) on community resilience and response to emergencies.
  - Investigating the impacts of climate change on First Nations, Inuit, and/or Métis communities and how they relate to community resilience and the management of public health emergencies.
  - Investigating the contextual factors that affect two-way communication and mechanisms for the co-development of emergency management actions in different communities and priority populations.
- Explore strategies to embed Indigenous ways of knowing into emergency management.
  Specific topics may include:
  - Exploring ways to develop a holistic model of planetary wellness based on the intersections of traditional land, water, and food practices with Western ways.
  - Understanding how Indigenous communities define public health emergencies and their acute and chronic effects on communities and the collective.
- Explore how emergency management efforts can align with local Indigenous leadership and create space for Elders, women, youth, and community participation to maintain Indigenous self-governance.

Prioritizing Community Engagement and Local Knowledge to Foster Co-Development (continued)

› Explore the extent to which current knowledge and health promotion approaches that incorporate the needs and values of specific communities are or can be applied to practice, policies, and programs for different emergency contexts and priority populations.
Specific topics may include:

- Understanding differential risk perception across communities and priority populations during emergencies and how public health authorities and scientific organizations apply those learnings to risk communications and public health measures.

› Explore the needs, assets, perspectives, and cultural and societal contexts of different communities in relation to emergencies.
Specific topics may include:

- Exploring ways to improve capacity to listen to individuals and communities in order to better serve their needs, to shift from delivering information to meaningful two-way communicating for action.

Centring Equity in Science, Evidence, and Technology

- Use interoperable surveillance and data collection methods or tools to capture disaggregated information on health equity indicators (e.g., race-based data) to track disparities and the disproportionate effects (including long-term impacts) of emergencies.
- Establish methods, tools, and processes for the analysis of health equity data to understand differential risks and health outcomes in emergency contexts.
- Explore equitable and ethical considerations in the use and application of emerging technologies for surveillance and risk communications in emergency contexts.
  Specific topics may include:
  - Understanding the rapidly changing communication needs of individuals, priority populations, and communities for different types of emergencies.
- Identify what data are needed to assess community health and resilience to emergencies, beyond the aggregation of individual-level data (e.g., indicators of social infrastructure resources within a community, indicators of levels of community engagement).
- Explore approaches of community-based surveillance and research and determine what methods are needed to strengthen the reliability, quality, and validity of collected data.

Fostering Workforce Development

- Evaluate emergency management workforce competencies with respect to trauma-informed care, cultural safety, and anti-racism.
- Explore facilitators and barriers to building a diverse, effective, and resilience-oriented emergency management workforce that is competent in health promotion approaches.
  Specific topics may include:
  - Understanding gaps in health data literacy among personnel that provide services within the context of public health emergencies.
- Explore perspectives of the public health and emergency management workforces (including unpaid caregivers and community volunteers) at varying jurisdictional levels on their understanding of roles and responsibilities, levels of preparedness, and capacity for inclusive engagement.
- Innovate, improve, and/or evaluate the best approaches to bridge disciplinary and practice siloes between community leaders, health promoters, and emergency management professionals.

Integrating Health Promotion Considerations and Approaches into Emergency Management Plans and Procedures

- Innovate, improve, and/or evaluate equity- and social justice-informed approaches, frameworks, or tools into the design, implementation, and evaluation of emergency management interventions to minimize inequitable impacts on different populations.
- Explore methods and indicators to systematically measure health promotion components (e.g., trust, social cohesion, well-being, health equity, structural and social determinants of health, community empowerment, and community resilience) and evaluate their impact on the effectiveness of emergency preparedness and response interventions.
- Establish methods to evaluate the extent to which approaches grounded in health promotion (e.g., building healthy public policies, creating supportive environments, and strengthening community action) impact costs and outcomes of public health emergencies.
  Specific topics may include:
  - Exploring the relevance and application of economic epidemiology in the formulation, implementation, and evaluation of health promotion policies within the context of public health emergencies.
- Document experiences on the use of health promotion approaches in past public health emergencies to guide evidence-informed approaches to emergency management.
  Specific topics may include:
  - Exploring how public health and emergency management disciplines worked with community leaders, organizations, and/or governments and document successes and barriers to effective collaboration.

APPENDIX A

Glossary

Emergency management: An essential public health function in Canada, defined as the planning for natural or human-made disasters to minimize serious illness and death, and responding to emergencies while minimizing societal disruption.[9] As further outlined in this year's CPHO report, modern emergency management uses an all-hazards approach which increases efficiency by identifying and integrating emergency management elements common across all potential risks and impacts.[10] Within the report, emergency management is presented as a continuum of the following activities, although they are not sequential and occur concurrently to best support communities before, during, and after emergencies:

- **Prevention and mitigation** programs and strategies are designed to protect lives, property, and the environment from an emergency or disaster by either eliminating it (preventing) or reducing its impacts (mitigating). Prevention and mitigation activities may occur independently or together.
- **Preparedness** activities occur prior to an emergency or disaster to manage its consequences and ensure an effective response and recovery.
- **Response** involves actions taken during (or immediately before or after) an emergency or disaster, such as implementing emergency response plans, conducting emergency communications, coordinating resources, and minimizing suffering and loss.
- **Recovery** includes actions taken to repair, restore, or improve conditions and strengthen resilience after an emergency or disaster.

Health Promotion: The process of implementing a range of health, social, economic, and environmental interventions that enable people and communities to increase control over, and to improve, their health.[11, 12] The 2023 CPHO report highlighted three main areas of action for a health promotion approach which support the conditions for community resilience. The full conceptualization of these have been described in Figure 7 within the 2023 CPHO report, but in brief, they include:

- **Healthy public policies:** Healthy public policy combines legislative, fiscal, or policy action intended to promote equity and target the broader determinants of health.[10, 11]

- **Supportive environments:** Supportive environments foster good health and well-being by improving the conditions of daily life. Supportive environments are strengthened through healthy public policy, and can include physical, social, and ecological environments; digital, information, and communication environments; and environments that help encourage behavior change to promote and protect health and well-being during an emergency.[10, 11]
- **Community action:** Health promotion requires governments to connect local context, community knowledge, and community priorities with formal decision making and initiatives. Such an approach prioritizes collective action at the community level and on the social, economic, political, and environmental determinants that shape health.[10, 11]

Priority populations: Populations experiencing increased risk of exposure, poor health outcomes, and/or burden of disease due to pre-existing social, economic, environmental, and/or health inequities related to social and/or structural determinants of health including racism, discrimination, and colonization.[10, 13]

Science: The pursuit and application of knowledge and understanding of the natural and social world following a systematic methodology based on evidence.[14] This includes a continuum of creative and systematic activities directly related to the generation, advancement, dissemination, and application of scientific and technological knowledge. In the context of this report, this may include knowledge syntheses, operational/implementation research, applied research, and observational and intervention studies.

Research: Any undertaking intended to extend knowledge through a discipline's inquiry or systematic investigation.[15]

APPENDIX B

Methods

An iterative mixed methods approach was taken to scope, synthesize, validate, and prioritize the knowledge gaps and research needs in this document. The methodological objective was not to achieve absolute consensus among all sources and experts consulted, but rather to identify the priority knowledge gaps and research needs expected to have the greatest impact on the implementation of a health promotion approach to emergency management in Canada.

Scoping and Synthesis of Knowledge Gaps and Research Needs

Knowledge gaps and research needs were identified in response to the question: "What are the most pressing research questions or activities needed to advance the implementation of health promotion approaches to public health emergency management in Canada?". Key data sources included 1) the 2023 CPHO report, *Creating the Conditions for Resilient Communities: A Public Health Approach to Emergencies;* 2) an environmental scan and review of peer-reviewed and grey literature conducted in collaboration with PHAC's Health Library; and 3) expert opinion solicited during various engagement activities led by PHAC's Office of the Chief Public Health Officer and Office of the Chief Science Officer (see Acknowledgements).

Relevant gaps were identified via the literature review (N=308, from 41 key documents, see Appendix C) and engagements (N=137, from 19 engagements). The quality and strength of evidence identified were not assessed. These were analyzed for broad themes and consolidated into a preliminary list of knowledge gaps and research needs. Sex- and Gender-Based Analysis Plus was applied to the synthesized list, and feedback was sought from key partners in multiple iterative rounds. Specific considerations and priorities for First Nations, Inuit, and/or Métis (FNIM) communities were solicited from FNIM-focused literature and engagements, and are incorporated throughout the final document.

Validation and Prioritization of Synthesized Knowledge Gaps and Research Needs

An expert consultation was conducted via survey to validate and prioritize the preliminary list of synthesized knowledge gaps and research needs (adapted methodology from James Lind Alliance and the Child Health and Nutrition Research Initiative).[16, 17] The survey was disseminated to an expert reference group comprised of individuals with academic, professional, and/or lived, living, or personal experiences relevant to the 2023 CPHO report topic.

From the list of synthesized knowledge gaps and research needs, expert participants were invited to identify up to ten gaps/needs that they felt best satisfied each of three equally weighted validation and prioritization criteria: significance, answerability, and equity (see text box "Validation and Prioritization Criteria"). Responses were summed across the three criteria and aggregated across respondents to identify the priorities that demonstrated the highest concurrence.

Experts were also invited to recommend additional knowledge gaps and research needs not captured by our preliminary analysis. Respondents that self-identified their ability and expertise to speak to FNIM research priorities were also invited to recommend those critical to advancing the application of health promotion in emergency management for FNIM communities in Canada. While the latter can provide guidance for public health research with and by FNIM Peoples, they should not be interpreted as representing the totality of priorities on this subject and should not subsume the right to self-determination of priorities through Indigenous-led approaches. Additional knowledge gaps and research needs identified by survey respondents were reviewed for relevance and novelty, and synthesized into existing gaps. These additional inputs have been incorporated to the final document under the heading "Science and Research in Emergencies" or as specific sub-bullets in "Priority Knowledge Gaps and Research Needs".

This document underwent a final critical review by key partners to ensure alignment with the 2023 CPHO report topic and broader public health needs.

Validation and Prioritization Criteria

Significance: The knowledge gap represents a true gap in the evidence base, data, methods, or tools required to systematically advance the integration of health promotion principles into emergency management practices, policies, and programs in Canada.

Answerability: This knowledge gap can be addressed by science and research activities and seems feasible given current capacity in Canada (e.g., institutions, research infrastructure, human resources, and funding).

Equity: Addressing this knowledge gap will result in more diverse, equitable, and inclusive emergency management practices and/or reduce inequitable outcomes following emergencies and emergency interventions in Canada.

APPENDIX C

Sources Consulted

The key documents listed below were used to identify and consolidate preliminary knowledge gaps and research needs. While they are not directly cited, these sources were consulted throughout the development of the priority knowledge gaps and research needs presented in this document.

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Acknowledgements

I express my gratitude to the Chief Public Health Officer of Canada, Dr. Theresa Tam, a champion for science and research within her vision for public health system transformation.

In addition to the advisors and key informants that contributed to the CPHO report, I thank the following groups whose thoughtful inputs and recommendations were integral to the synthesis of the knowledge gaps and research needs expressed in this document:

- Members of the Government of Canada's Indigenous STEM Cluster
- Members of the National Alliance of Provincial Health Research Organizations
- Members of the Steering Committee for the Canadian Institutes of Health Research's Centre for Research on Pandemic Preparedness and Health Emergencies
- Members of British Columbia's COVID-19 Strategic Research Advisory Committee

Thank you to all those that volunteered their expertise by answering our expert consultation survey, validating, and prioritizing the knowledge gaps and research needs.

Thank you to colleagues at the Office of the Chief Public Health Officer, the Canadian Institutes of Health Research, staff from the National Collaborating Centre for Healthy Public Policy and the National Collaborating Centre for Methods and Tools, Dr. Katherine Frohlich, as well as CPHO report advisor Dr. Suzanne Jackson for their critical review of drafts of the research priorities and this document.

Finally, I am grateful for the work of my team, Mette Cornelisse, Dr. Sophia Lavergne, Anna Bellos, and Sydney Jennings who supported the development of this report.

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