National Collaborating Centre for Infectious Diseases
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Measuring What Counts: Equity Prompts for Public Health Preparedness and Resilience

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Margaret Haworth-Brockman, MSc
Claire Betker, RN, PhD
Sophie Webb, PhD(c)

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National Collaborating Centre for Infectious Diseases

and

National Collaborating Centre for Determinants of Health

Contact us at:

National Collaborating Centre for Infectious Diseases
Rady Faculty of Health Sciences
University of Manitoba
Tel: (204) 318-2591
Email: nccid@umanitoba.ca
www.nccid.ca

National Collaborating Centre for Determinants of Health
St. Francis Xavier University
Antigonish, Nova Scotia
Tel: (902) 867-6133
Email: nccdh@stfx.ca
www.nccdh.ca

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In 2025, we wish to thank all the public health personnel we have discussed this project with in the last 4 years.

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Measuring What Counts: Equity Prompts for Public Health Preparedness and Resilience

Introduction

Pandemic preparedness, response, mitigation and recovery is a core function of public health in Canada[1]. Under the leadership of public health agencies, departments and units across the country, the responses to SARS-CoV2 (COVID-19) in Canada saw unprecedented mobilization of funds, human resources and materials, involving communities and federal, provincial and territorial departments across the country.

COVID-19 highlighted and amplified long-standing inequities in Canada and health systems. Unequal access to health care, racism and marginalization in job opportunities and essential services, and the inability to account for inequities in health data caught the public's attention. To make health equity explicit and to encourage thoughtful attention to equity concerns in public health, it is helpful to situate pandemic preparedness and response in the context of wider systems. Public health systems can contribute to reducing health inequities and contribute to a more resilient community; resilience in our communities can influence the impact of the pandemic in Canada. To understand inequities and the disadvantage they create, it is critical to measure what counts and to examine what is being counted, and who is being missed [2, 3].

Early in 2020, as the spread and effects of COVID-19 rapidly increased in Canada, the National Collaborating Centres for Infectious Diseases and Determinants of Health (NCCID and NCCDH) reviewed the lessons learned and recommendations on health equity from past pandemics in Canada, SARS (severe acute respiratory syndrome) and H1N1 (formally, A(H1N1)pdm09). As the country prepared for a second and subsequent waves of the epidemic, while concurrently managing on-going transmission and infection, public health organizations were in cycles of planning, response, and recovery. This document was originally written to support public health organizations in reducing inequities and preventing further harm or unintended consequences from public health measures.

In 2025, health equity considerations in pandemic preparedness are as important as they were in the early years of COVID-19. The discussions on health equity, resilience and using indicators in this document have all been updated, based on conversations with public health personnel in the past four years.

This guidance document has two purposes:

1. To encourage decision-making and action for pandemic preparedness and response that explicitly incorporate attention to structural and social determinants of health and address health inequities; and
2. To augment existing public health system resilience indicators to measure performance in addressing inequities and sustaining or enhancing equitable approaches now and in future outbreaks and pandemics.

Background

At the time of the 2003 SARS outbreak, Canada's public health system was found to be lacking, uncoordinated, under-resourced, insufficient and inadequately prepared [4]. Several reports and studies following that pandemic examined these inadequacies, and changes to public health systems were subsequently made across Canada [5, 6]. Among the changes made, along with the establishment of the Public Health Agency of Canada and the Office of the Chief Public Health Officer, were Federal/Provincial/Territorial structures focused on surveillance, planning, research, and knowledge translation as well as policy and decision-making systems [7].

Less than a decade later, the 2009 H1N1 pandemic proved to be another test of public health capacity and preparedness. Again, there were similar post-event assessments and evaluation reports as following SARS [8, 9]. New recommendations following the SARS and H1N1 pandemics included calls for an improved focus on at-risk populations [10, 11] and on the influence and effects of pandemics on social determinants of health, in keeping with Canada's population health approach [4]. However, recommendations did not explicitly address the need for approaches or analyses that integrate action to promote health equity or related concepts.

More than 20 years post-SARS, Canada's stated values and priorities to prepare for and respond to the needs of "vulnerable" or "priority" populations[1] are perhaps better articulated [12–14]. Reports and position papers refer specifically to the need to redress colonization and marginalization of First Nations, Métis and Inuit peoples [15] and systemic racism [16, 17] that create health inequalities, and to improve sex- and gender-based analysis and consider intersections with other determinants of health [18]. Additional challenges of meeting the needs of rural and remote communities, where health workforces are limited and access to care and services remains problematic, were also made more explicit [19, 20]. There is, however, an overall desire to formalize processes and actions aimed at preventing and reducing inequities to improve the potential for more equitable health outcomes in Canada [3]. Racialized, low-income and immigrant communities, particularly women among them, were disproportionately affected by COVID-19 [21–23] . Early in the pandemic, for example, the Wellesley Institute reported that, "People who identified as Arab, Middle Eastern, West Asian, Latin American, South-East Asian or Black were 6-9 times more likely to test positive for COVID-19 than the White population according to new figures from Toronto Public Health covering the period from mid-May to July [2020]"[24]. Other authors reported unequal burdens of disease that continued over the pandemic years [25–28]While there is growing recognition of the issue, there is also a need for concrete ways to take action and to redress these inequities.

Project phases

This guidance document summarizes the phases of a project conducted by the National Collaborating Centre for Infectious Diseases (NCCID) and the National Collaborating Centre for Determinants of Health (NCCDH) in 2020 and it includes updates for 2025. Our aim is to encourage public health practitioners and decision-makers to explicitly consider health equity in pandemic preparedness,

[1] We note that this terminology – vulnerable, at-risk, priority, marginalized, etc. – emerges from paradigms of systemic discrimination. As noted in the section to follow, we use the term "disadvantaged" in the rest of this document, as suggested by current scholars.

response and recovery. In the first phase, we engaged a consultant to review key reports that evaluated public health preparedness and responses to SARS (2003) and responses to the 2009-2010 H1N1 epidemic. The goal of the review was to assess the extent to which health equity was implicitly or explicitly considered in the reports. In the second phase, we drew on recent work by Khan and colleagues, who developed a framework and indicators to measure the performance of public health organizations in emergency preparedness [29–31]. Our aim is to extend their formative work to emergency response and recovery [32] (see Figure 1), given that public health systems manage iterative cycles of prevention, preparedness, response and recovery. Khan et al. were interested in the resilience of public health *systems*, but we also want to look at indicators of the systems' ability to consider the resilience of *populations* where there has been response to or scope for mitigating health inequities. A third phase involved conversations and workshops with public health practitioners and decision-makers to consider the utility of these indicators and guidance format(s) that will be of most use to public health organizations and agencies [33]. In 2024, we reviewed and updated this document. Our focus here is on the capacity of public health organizations to integrate health equity considerations systematically and systemically in all decision-making for emergency preparedness, response and recovery.

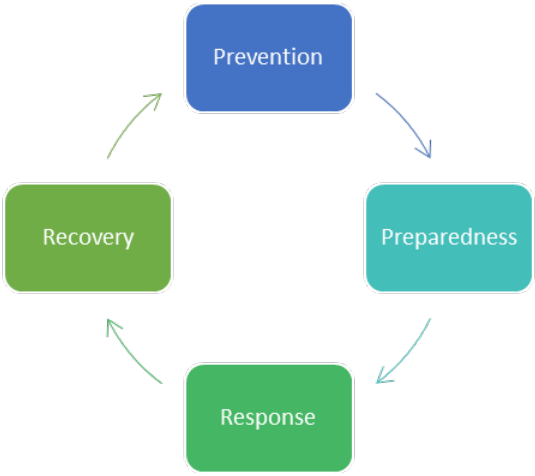

Figure 1: A typical cycle for emergency management [32].

Inside this document

There are four parts to this document. Part 1 provides background information on key documents and actions related to reducing health inequities in Canada. It also highlights the importance of integrating equity values and principles in public health emergency preparedness and management.

Part 2 is a summary of our review findings on attention paid to health equity and inequities in documents written after SARS and H1N1 related to pandemic planning and response. We also identify what is needed in the short and long term to continue reporting on inequities and disadvantage during the current and future outbreaks.

A decision-making process that can be adapted by public health and related organizations is set out in Part 3. In particular, we highlight the work of Dr. Yasmin Khan and her colleagues, who developed a public health emergency preparedness framework to support public health system resilience [29].

Part 4 features a set of indicators derived by Khan and her colleagues through a rigorous research process[30], alongside newly updated health equity prompts. These prompts now include both detailed, action-specific guidance and higher-level, meta prompts designed to ensure that equity considerations are integrated at every stage of public health planning and decision-making. The indicators are intended to encourage public health organizations to be explicit in planning and approaches to integrate and involve populations that are at greater disadvantage during a pandemic in Canada. The indicators and our prompts point to the necessity of collecting and reporting on health

status and outcomes of populations, disaggregating by (among other factors) sex, age, place of residence, ethnicity and race.

Part 1. Considering Health Equity in Pandemic Preparedness, Response and Recovery

Canada has a record of supporting global action on the social determinants of health and addressing health inequities: for example, the World Health Organization (WHO) Commission on the Social Determinants of Health [34], the Rio Political Declaration on the Social Determinants of Health [35], and the Astana Declaration on Primary Health Care [36]. This includes Canada's support of the United Nations Sustainable Development Goals [37].

Health inequities, unlike health inequalities, refer to differences in health outcomes that are systematic, unfair, and avoidable. These inequities are deeply embedded in the very structures and systems that organize our society – structures that were historically designed to privilege certain groups while deliberately disadvantaging others. These systems include, but are not limited to, the economic systems that perpetuate wealth disparities, educational systems that limit access to quality education for marginalized groups, and legal and political frameworks that enforce systemic racism and other forms of discrimination. It is these entrenched structures—manifested through policies, practices, and cultural norms—that create and sustain health inequities, disproportionately affecting those who have been marginalized or excluded [13].

> **Equality** refers to individuals and social groups having the same opportunities to obtain and control social, economic and political resources.
>
> **Equity** means fairness and is relative, based on the different needs, preferences and interests of individuals or social groups.
>
> Health equity is achieved when avoidable, systematic, and unjust systemic differences are removed.
>
> Source: Pan American Health Organization [2].

Health equity means that all individuals and communities have fair access to and can act on opportunities to achieve their full health potential. Achieving health equity requires addressing the social, economic, and environmental conditions that create inequalities in health outcomes. It is grounded in the principles of fairness and justice, recognizing that health inequalities are not just differences, but are socially produced, avoidable, and fundamentally unjust. Public health actions recognize that individuals and population groups do not begin at the same starting line due to the historical and ongoing impacts of structural inequalities. To address these inequities, public health must adopt a deliberate and sustained focus on modifying the societal structures and systems that perpetuate these disparities. This involves challenging and changing the societal choices—such as systemic racism, economic inequality, and political decisions—that have been embedded into our institutions and policies, leading to differential access to resources, opportunities, and ultimately, health outcomes. By addressing these root causes, public health can work towards creating a more just and equitable society where health outcomes are no longer determined by one's

race, economic status, or other social determinants [38]. Recently, the Chief Public Health Officer prioritized a health equity approach to reduce health inequalities in key populations and guide prevention and promotion leadership at the national level [14]. It is extremely important to reinforce and build on this commitment as pandemics illuminate and magnify existing social, economic and health inequities and have the potential to contribute to additional inequities [39].

Canada has a Sex- and Gender-based Analysis (SGBA)[2] Policy for the Health Portfolio, which includes Health Canada and the Public Health Agency of Canada [40]. SGBA is the systematic consideration of how sex (biology and physiology) and gender (social norms and expectations of and on individuals) shape people's experiences and intersects with societal pressures and relationships [41]. SGBA is both a process – analyzing similarities and differences among and between groups of males and females, and a product – information about the ways in which health is shaped by inequities [41]. SGBA is a necessary process and result to understand the full effects of COVID-19 and to illuminate where there are gender and sex inequities [42].

In 2015, the Truth and Reconciliation Commission released its final report, *Honouring the Truth, Reconciling for the Future* [43]. The Government of Canada has since documented federal actions to redress generations of racism, neglect and cultural genocide of First Nations, Inuit and Métis peoples [44]. Canada's response includes signing onto the United Nations Declaration of the Rights of Indigenous Persons (UNDRIP) [45]in 2016 (although Canada "adopted" UNDRIP in 2010). There are on-going discussions regarding co-developing related legislation federally and in the provinces and territories.[3]

In 2018, the Government of Canada officially recognized the International Decade for People of African Descent [46], which states that "people of African descent represent a distinct group whose human rights must be promoted and protected" [47].

These are examples of how the values and principles of equity are articulated and applied in Canada. Justifying choices made in emergencies requires that decisions are consistent with the values and principles of public health including equity and social justice [13]. To do so requires a determined effort to examine policies, programs and structures and to make changes that align with stated equity values. The NCCDH, among other public health organizations, provides numerous resources for putting these values and concepts into practice in public health organizations (see www.nccdh.ca).

[2] Also referred to as GBA+ (gender-based analysis plus) in federal departments.

[3] https://www.thestar.com/news/canada/2020/03/11/undrip-covid-19-key-issues-for-talks-with-pm-and-premiers-say-indigenous-leaders.html

Part 2. SARS and H1N1: Pandemic Preparedness with Equity in Mind?

Our initial review, in the first phase of the project, examined the lessons learned from SARS and H1N1. We looked for the ways in which the summary reports comment on or address inequities or disadvantage observed for First Nations, Inuit and Métis peoples; by sex and gender; for residents in rural and remote communities in Canada; and other factors such as race. We use the term *disadvantaged* – elsewhere referred to as vulnerable, marginalized, under-served, high-risk or priority populations or populations of interest – to recognize and acknowledge that the current systems actively create disadvantage and privilege others by providing unfair advantages based on their identity or position in society [48, 49].

Canada's sentinel report following the SARS pandemic is *Learning from SARS: Renewal of Public Health in Canada*, also called the Naylor report [4] . It is a comprehensive review that provides both a short-term assessment of lessons learned from public health interventions to contain SARS and advice on longer-term actions for pandemic preparedness and response, as well as infectious disease control and prevention. This report became the foundation for public health renewal in Canada.

The Naylor report addresses issues of health equity and social determinants in a few ways. The first is through the application of ethics, primarily from a clinical perspective. The authors note the many "ethical trade-offs posed by the collateral effects of caring for SARS patients … [requiring] that decision makers balance controlling the spread of the disease … and the rights of non-infected patients to access medical care" [4] (p 179). They conclude that, "an ethical framework of some type may be useful for future decision makers" [4](p 179).

An element of ethics that is not explicitly acknowledged in the Naylor report is the importance of distinguishing and applying public health ethics (differentiated from clinical ethics). Notably, public health ethics incorporate attention to the social determinants of health and the importance of taking action to reduce and not increase health inequities [50]. Ethical judgements about justice and fairness in public health equity work have a significant effect on decision-making at all levels [13].

A second issue raised in the Naylor report is the difference in public health capacity across jurisdictions. The report notes inequities between provinces and territories and between hospitals, particularly in relation to compensation for health care workers [4]. Additionally, a section of the report describes the significant differences in public health capacity in rural and remote parts of the country. Ensuing recommendations focus on the federal government's role to provide funding transfers to the provinces and territories that take into consideration "potential differences in delivery costs due to geographically dispersed populations or differing proportions of higher needs populations (e.g., health status, poverty, language, education, etc.)" [4] (p 83). The report specifically identifies the necessity of adequate funding for core public health services for "business as usual" in order to ensure surge capacity is available during emergencies such as pandemic planning and response [4] (p 102).

Thirdly, the Naylor report notes the need to consider social determinants of health for Canadian populations to ensure a flexible and sustainable public health system. This is in keeping with a population health approach that:

> ...recognizes that the health of populations and individuals is shaped by a wide range of factors in the social, economic, natural, built, and political environments. In turn, these factors interact in complex ways with each other and with innate individual traits such as sex and genetics. Such a broad perspective on health takes into account the potential effects of social connectedness, economic inequality, social norms and public policies on health-related behaviours and on health status [4] (p 19).

The Naylor report identifies four areas to address disadvantage:

1. Ethical balance between clinical needs of individuals and the needs of populations must be maintained.
2. Differences in public health funds and capacity between provinces must be addressed.
3. Social determinants of health must be considered in public health approaches.
4. The particular disadvantage and historical oppression and neglect of First Nations, Métis and Inuit communities must be rectified.

Source: *Learning from SARS: Renewal of Public Health in Canada* [4].

As a result, strategies for preventing, preparing for, responding to and recovering from outbreaks need to include not only excellence in outbreak response planning and management, but also "comprehensive approaches to health promotion [that] may involve community development or policy advocacy and action regarding the environmental and socioeconomic determinants of health and illness" [4] (p 47).

Lastly, health inequities for First Nations and Inuit peoples are noted in particular. The Naylor report states that "addressing [these inequities] requires a wide-angle approach to health determinants and community development that must clearly be integrally supported and guided by the affected Aboriginal communities" [4] (p 79). However, there is no further articulation of solutions or recommended actions.

Another review of the lessons from SARS was published 15 years later by Dr. Theresa Tam, Canada's Chief Public Health Officer [51]. In her commentary, Dr. Tam summarizes key milestones in Canada's public health emergency response since SARS and notes issues related to health equity and the social determinants of health. She describes the variation in public health capacity in Canadian provinces and territories, and between countries globally. However, the health equity implications of these variations are not made explicit.

The one exception is an acknowledgement that public health planning and interventions must be inclusive of First Nations, Inuit and Métis peoples. Given the devastation of past epidemics on Indigenous populations, Tam recommends that "socio-culturally appropriate public health planning" is critical to public health emergency preparedness [51] (p 100).

There are a number of studies and reports that describe how this can be done effectively in collaboration with communities when preparing for and mitigating the effects of natural disasters [52–55]. This work requires having and maintaining an adequate and competent public health workforce in every public health organization -- local, regional, provincial/territorial, federal – across Canada to provide essential public health services within their own jurisdiction and to be mobilized to respond to threats in any part of the country or the world [4, 56]. In other words, an adequate workforce able to work in collaboration with communities to build relationships and provide essential programs and

services as well as having the capacity of highly skilled practitioners to surge in response to an urgent or emergent situation such as a pandemic. This is not the situation in Canada where the public health workforce has been eroded over recent decades [57, 58].

The recent Health Emergency and Disaster Risk Management Framework from the WHO [59] provides guidance for including equity concerns and explicit attention to the needs of populations most at risk:

> While emergencies affect everyone, they disproportionately affect those who are the most vulnerable. The needs and rights of the poorest, as well as women, children, people with disabilities, older persons, migrants, refugees and displaced persons, and people with chronic diseases must be at the centre of our work [59] (p v).

The vision is to ensure that every jurisdiction (nation) has the capacity and systems across health and other sectors to reduce risks and consequences of a health emergency. The WHO framework emphasizes a whole-system response that includes prevention, preparedness and readiness, together with response and recovery. Working together is essential, as emergency response is not the work of one sector or agency alone [59]. However, given the emerging picture of disproportionate impact on some sectors of the population[4] where health and other government departments may not be well connected, collaborative planning, response and recovery efforts are even more essential. These relationships must be developed and maintained before and throughout the pandemic.

To accomplish this requires a whole-of-government (or more aptly, a multi-departmental, cross-government) approach with an upstream focus (see Figure 2). Community members must be engaged throughout.

Figure 2. Suggested changes in approach through Health Emergency and Disaster Risk Management [59].

Building on this foundational understanding, recent literature and resources have further expanded the concept of resilience in public health to encompass a multi-dimensional approach. Resilience is now understood not only as the ability to 'bounce back' but as the capacity to adapt to new circumstances and thrive despite challenges. This includes:

- **Individual Resiliency**: Personal attributes and resources, social support networks, and the capacity to find meaning and purpose in life despite challenges, are essential for resilience. Transformational resilience, which allows individuals to adapt and thrive in new circumstances, is crucial for long-term well-being [60].
- **Community Resiliency**: At the community level, resilience involves the collective capacity to support each other during difficult times, adapt to changes, and rebuild stronger systems. Social capital, including bonding, bridging, and linking capital, plays a crucial role in community resilience [60].

[4] https://www.thestar.com/news/canada/2020/05/28/which-workers-are-being-hit-hardest-by-the-covid-19-lockdown-these-6-graphics-paint-a-stark-picture-of-canadian-inequality.html

- **Systemic Resiliency**: Systemic resilience refers to the health system's ability to continue functioning and delivering essential services during and after crises. This involves robust health infrastructure, effective governance, adequate funding, steady commitment to values, and integrated public health functions. Embedding resilience into all health system components is critical to ensuring the delivery and continuity of quality health services in all contexts, including during emergencies [61].

In emergency management, including response and recovery, resilience contributes to strengthening social and physical agency, and increases our ability to cope with, respond to, recover, and learn from emergencies such as a pandemic. The expanded understanding of resilience underscores the importance of anticipating potential risks, adapting strategies and services in response to emerging challenges, and transforming systems to be more robust and equitable in the future.

COVID-19 raised again issues about inequity, disadvantage and the need to understand who is (or could be) most affected in Canada, where and why [62–65].

In the **long term**, it is essential for public health to be intentional and to record and report on lessons learned on equity issues throughout an outbreak response. Involving multiple systems levels – including communities – is essential and requires strong and effective partnerships, tools and processes.

In the **short term**, public health needs to establish a framework and indicators to structure reporting on inequities and disadvantage in the post-COVID-19 time, throughout prevention, planning, response, management and recovery. The Pan American Health Organization provides a useful resource, *Promoting Health Equity, Gender and Ethnic Equality, and Human Rights in COVID-19 Responses: Key Considerations [66]*, with a succinct summary of issues and supporting documents to encourage countries to explicitly and thoughtfully recognize and address inequities. As well as highlighting key issues for COVID-19, the document has brief sections on health equity (pp 3-5), gender (pp 6-9), ethnicity[5] (pp 10-11), and human rights approaches including rights of the child, right to housing, economic rights and gender rights (pp 12-14). This reference and the work of Khan et al. [29, 30] provide the basis for integrating health equity in measures of health system resilience and ensuring that disadvantaged populations in Canada are integral within planning, response and recovery efforts. Ensuring an adequately resourced and competent workforce in all jurisdictions across Canada is essential.

[5] The Pan American Health Organization uses the term "ethnicity", defined as "a purely social concept that refers to the characteristics common to a group of people that differentiate it from another group. Acquired through learning that begins in childhood, these characteristics are normally related to cultural practices, language, history, or ancestry. Members of a particular ethnic group view themselves as culturally different from those of other social groups, and they, in turn, are likewise viewed by others." Source: https://iris.paho.org/bitstream/handle/10665.2/34195/CE160-15-e.pdf?sequence=1&isAllowed=y

Part 3. Support for Equity-Focused Pandemic Decision-Making

Public health emergency preparedness, response and recovery in Canada address population-level preparedness, distinct from clinical care and health care facility preparedness. However, communication and integration of preparedness activities between sectors (including within the health system), government and the community are also the responsibility of public health agencies.

Research conducted in Canada by Khan and colleagues [29, 30] focused on filling the knowledge gap in existing public health emergency preparedness frameworks around the nature of public health systems. The authors consider the emergency context to be a complex, adaptive system. They developed a public health emergency preparedness framework for use by local and regional public health organizations to promote resiliency and to focus on upstream readiness.

Khan et al. identified 11 essential elements for public health emergency preparedness:

- Governance and leadership
- Planning process
- Collaborative networks
- Community engagement
- Risk analysis
- Surveillance and monitoring
- Practice and experience
- Resources
- Workforce capacity
- Communication
- Learning and evaluation

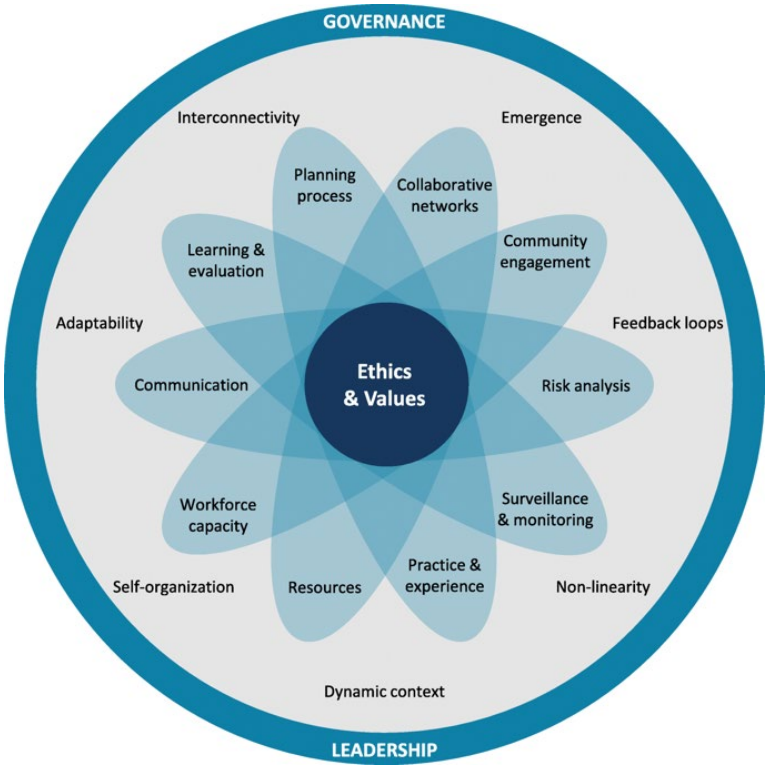

Figure 3: Resiliency framework for public health emergency preparedness [29].

Their framework is depicted in an "organic" image (Figure 3) to reflect "… the inter-connectedness of the elements, overlapping at the centre as a symbolic connection in the core of the framework. The elements are depicted as part of the whole, while emphasizing the cross-cutting element of *governance and leadership* encircling the stand-alone elements" [29] (p 12). Placing *governance and leadership* surrounding the other elements signifies the "means to facilitate and manage the dynamic, complex adaptive system" of the public health emergency preparedness framework [29] (p 12).

Khan and colleagues acknowledge that, although the elements of the framework connect to the wider system of community capacity and resilience, which they call "social infrastructure", the framework "does not support typical approaches to public health intervention evaluation and may require new approaches that stress concept mapping and a more sophisticated articulation of interconnectedness" [29] (p 14). Significantly, the framework situates ethics and values at the centre of the complex system.

Equity was one of the values identified as a core principle for public health emergency preparedness practice in Canada.

To make health equity more explicit and to help encourage thoughtful attention to equity concerns, it is helpful to situate the emergency preparedness framework in the context of the wider system. It is also important to recognize that higher levels of health equity contribute to a more resilient community and a more resilient community contributes to a more resilient emergency preparedness system.

Taking an equity approach means identifying and addressing equity issues within the public health emergency preparedness framework, while simultaneously building a culture of equity at the community level. A resilient community is one that is able to adapt to future uncertainties and meaningfully engage with and support equity-seeking groups.

Oxman and colleagues [67] recommend that decision-makers consider four areas to assess the impact a policy or program option is likely to have on health equity. Explicitly applying an equity lens along with ethical considerations of service and policy decisions helps decision-makers to recognize how and where decisions can impact some populations more than others. The following questions were adapted from their work:

1. Which groups or settings are likely to be disadvantaged in relation to an option being considered?
2. Are there anticipated differences in the relative effectiveness of an option for disadvantaged groups or settings? If yes, what are they?
3. Are there different baseline conditions across groups or settings such that the effectiveness of an option would be different, and/or the problem more or less important, for disadvantaged groups or settings? If yes, what are those conditions?
4. Are there factors that need to be considered when implementing an option to ensure inequities are not increased and, if possible, reduced? If yes, what are those factors?

In the context of a global pandemic, it is critical that similar questions be asked throughout all phases of the emergency management cycle. Many natural disasters and other emergencies occur in rural and remote parts of Canada, and the four questions posed by Oxman et al. can be further parsed to consider the particular disadvantages found outside urban areas.

Decision support processes include summarizing evidence as well as context-specific aspects such as determining recommendations for action and considering factors relevant to implementing change. To support health equity, decision-making must be driven through deliberative processes that involve key stakeholders and include different types and sources of evidence and engagement.

Focusing on equity issues – such as population needs, experiences of disadvantaged groups, access to determinants of health, power dynamics, allocation of scarce resources, etc. – as part of the decision-making process within each element of the public health emergency preparedness framework can encourage personnel to challenge the *status quo*, and result in more innovative and effective decisions.

Part 4. Performance Measurement: Indicators of What Counts

Health indicators are measurable characteristics that describe one or more aspects of individual or population health, living conditions, political and economic governance and structures, and the performance of health systems. They " can provide comparable and actionable information across different geographic, organizational or administrative boundaries and/or can track progress over time" [68]. The Canadian Institute for Health Information has developed a framework for health system performance indicators that has been used across jurisdictions in Canada, for example [69] .

Vigilance in collecting, reporting and presenting stratified data that examine the intersections of the determinants of health and opportunities to mitigate inequities is essential. To understand inequities and the disadvantage they create, it is critical to measure what counts, to examine what is being counted, and who is being missed [3, 70].

Public health indicators are measurable variables used to assess the health status of populations and the performance of health systems. These indicators provide essential data that inform public health decision-making, enabling practitioners to identify trends, set priorities, allocate resources, and evaluate the effectiveness of interventions. These indicators are typically categorized into two main types: health status indicators and health system indicators.

Health indicators should be:

Relevant: meaningful and familiar to the producers and the users.

Well-defined: clear and understandable about what they are intended to measure and why.

Valid and reliable: accurately measure what they are supposed to measure, from location to location.

Technically feasible: possible to gather data for the indicator, either from existing survey or administrative data, or through some new instrument.

Usable: can be acted upon and lead to policy change as needed.

Manageable: reasonable number so collecting, reporting and presenting the indicators are not onerous.

Source: von Schirnding [72].

Health *status* indicators measure the outcomes related to the health of a population, such as rates of disease, mortality, and life expectancy. These indicators help public health professionals understand the overall health of a community and identify areas that require attention. In contrast, health *system* indicators assess the performance of health systems, including the availability, accessibility, quality, and efficiency of healthcare services. These indicators are vital for assessing whether health systems are truly serving all members of the population, ensuring that the most vulnerable are not left behind, and actively working to eliminate health disparities and advance equity[71–73].

The use of indicators in public health has a long history, rooted in the need to measure and monitor health outcomes, system performance, and the effectiveness of public health interventions. The World Health Organization (WHO) has been at the forefront, recommending the use of health indicators since its inception in 1948. WHO's work on global health indicators has provided a standardized approach to assessing health outcomes, helping countries track progress towards goals like the Millennium Development Goals (MDGs) and, more recently, the Sustainable Development Goals (SDGs) [74]. The Pan American Health Organization (PAHO) has similarly emphasized the importance of indicators, particularly in the context of improving health equity across the Americas. PAHO's Strategic Plans,

including the current 2020-2025 plan, highlight the use of measurable indicators to monitor progress and address the health challenges in the region [75].

Beginning in 2016, Khan et al. undertook a series of methodical consultations to develop first the framework for public health emergency preparedness [29] described in Part 3 and then, via a Delphi process, a list of 67 indicators to measure public health readiness in all elements of the framework [30] (Table 1). In both parts of their work, the authors emphasize that public health systems include decision-making and functions at local and regional levels, as well as (in Canada) in provincial, territorial and federal authorities. In June 2020, Public Health Ontario released a workbook to support health organizations to operationalize the public health preparedness framework [31] .

We have expanded the table of 67 public health system indicators to demonstrate how inequity and disadvantage can be taken into account at every stage of decision-making in emergency preparedness, response and recovery. For each of the 67 indicators we have added a prompt – a reminder or cue – to serve as an additional indicator that encourages explicit articulation of relevant health equity aspects for the original indicator. The prompts vary. In some cases, the prompt is specific to population characteristics; in other cases, we encourage public health personnel to ask themselves who has been accounted for and who might be missing from documents, protocols or processes.

Table 1. Number of indicators for each element of the public health emergency preparedness framework developed by Khan et al. [30].

Framework Element	# Indicators
Governance and leadership	12
Planning process	6
Risk assessment	5
Resources	6
Collaborative networks	4
Community engagement	4
Communications	11
Workforce capacity	7
Surveillance and monitoring	4
Learning and evaluation	3
Practice and experience	5
Total Indicators	**67**

The details we provide are intended to encourage very specific articulation of which populations are being disadvantaged already and which could be (further) disadvantaged as a consequence of public health organization actions or inaction. Where an indicator refers to collecting, retrieving or presenting data, the prompts are specific to encourage consistent stratification and cross-tabulation. For example, by age, by sex, by age and sex, by rural residence, race, ethnicity, and so on.

The prompts included in this document should be considered a starting point. They are not intended to be prescriptive but rather are presented to encourage a range of appropriate equity-informed decisions, actions and process development. At the heart of the prompts is meaningful engagement, partnership and involvement with communities.

For example (*A*, below), within the framework element of governance and leadership, Indicator 7 refers to preparedness of the public health organization (at any level) by already being a part of infrastructure aimed at reducing community risk. We have added a prompt to encourage a public health organization to include explicit attention to community partnerships as part of that preparedness infrastructure.

Example A.

Original Indicator (Indicator 7)	**Prompt to Encourage Health Equity**
The public health agency is a member of a local/regional multidisciplinary structure that aims to reduce community risks to emergencies and disasters. Network partners involved in this	Stakeholders representing disadvantaged populations are included in the leadership, governance and decision-making structures.

structure may include transportation, planners, industry, local/regional elected officials.	Who is missing?

As a second example (*B*), within the element of resources, our prompt for Indicator 24 is specific about the different ways to consider populations that experience inequities and are, or will be during an emergency, at greater disadvantage.

Example B.

Original Indicator (Indicator 24)	**Prompt to Encourage Health Equity**
The public health agency has established procedures to facilitate timely dispensing of physical resources to the community in the context of emergencies (e.g., may include medical prophylaxis and/or treatment).	Plans for timely dispensing include explicit attention to the needs of and opportunities to involve disadvantaged populations, including by geographic location, sex, race, age, First Nations, Métis and Inuit. Cultural safety is considered for what and how resources are dispensed. Assets and resources considered include distance to and availability of food during lockdown, distance to testing, primary health care, hospitals and critical care, as well as availability of reliable internet and transportation.

The element of community engagement includes indicators for establishing structures to include "community considerations". Our prompts in this example (*C*) encourage more explicit articulation of which communities and under which circumstances the engagement would occur. Furthermore, the prompt encourages a public health organization to take into account the resilience within communities as well as the structural and systemic disadvantage to be addressed.

Example C.

Original Indicator (Indicator 34)	**Prompt to Encourage Health Equity**
The public health agency provides and/or endorses education programs directed at the public to raise awareness about preparedness for relevant community risks.	Education programs are tailored for a variety of audiences (e.g., format, delivery), taking into consideration languages spoken, literacy levels, cultural safety, availability of on-line technology, and other population-level specifics. Education includes community actions that strengthen and draw from community resilience.

Finally, in terms of the core public health function of surveillance and monitoring, included indicators relate to collecting, recording, assessing and sharing information. Our prompts identify specific types of data to be collected that would point to inequities and guide decision-making (*Example D*). The capacity to disaggregate data according to race, for example, is essential to develop evidence-informed policy,

program and service decisions as well as resource allocation to ensure accessibility for the populations that are already disadvantaged or at risk of being disadvantaged.

Example D.

Original Indicator (Indicator 56)	**Prompt to Encourage Health Equity**
The public health agency has the capability for or access to enhanced and/or event-based surveillance systems relevant to local/regional risks.	Surveillance system is capable of recording and presenting data by age, sex, race, ethnicity, income and exposure to risk by geography.

Using the indicators in this way provides opportunities to strengthen public health responses by partnering to find and use community knowledge and resilience. We have added prompts to encourage and ensure that populations experiencing disadvantage are ***involved*** in decision-making and are ***counted*** in assessments of what is being achieved. The full list of our additional prompts to promote integration of health equity in the public health emergency preparedness framework is presented in Table 2. We see value in using these indicators to actively look for current and anticipate new areas where there are health inequities that can be addressed and corrected

The list of proposed prompts includes cross-tabulations that will provide important information on likely added risk of exposure to and poor outcomes from a pandemic between and among males and females, as well as sub-groups. Income, for example, is a strong proxy for disadvantage. Decisions will also have to be made about how the data are presented (for example as rate ratios or rate differences); these decisions are not value neutral [76].

Research and community information from other sources are also needed to analyze and present indicator data. By situating indicator data in the context of lives of individuals – including the links between personal identities and opportunities, family and social relations, and political and economic structures that do or do not disadvantage some populations – it is possible to make policy decisions to reduce disadvantage and improve pandemic health outcomes [3, 66, 77, 78]. Information from small-scale or localized studies may be the only way to understand sub-regional differences or health inequalities in minority populations.

Table 2. Public health emergency preparedness indicators developed by Khan et al. [31] with prompts for equity considerations.

The original indicators refer to public health "agency", which can be interpreted to mean a public health organization at any level of authority. Connections between and among public health organizations within provinces and territories require good communication and opportunities and resources for sub-provincial/territorial organizations to involve and respond to local populations.

Original Indicators (N = 67)	**Prompt to Encourage Health Equity**
Governance and Leadership (12 indicators)	***Are stakeholders representing disadvantaged populations, including Indigenous communities, included in the leadership, governance, and decision-making structures? Are the policies and procedures embedded with equity-focused values and principles that address systemic disadvantages and align with the TRC Calls to Action?***
1. The public health agency is a member of a local/regional structure for health-sector emergency management that aims to coordinate health system preparedness for emergencies. Network partners involved in this structure may include, for example, acute care, primary care, or emergency medical services, depending on the jurisdiction.	Intersectoral networks and partners include social and health agencies as well as community groups that are focused on and representative of specific, named, disadvantaged populations.
2. The public health agency's policies describe the **authority and procedures** under which it would respond to an emergency as the lead agency.	Authority and procedures include values and principles regarding explicit engagement with disadvantaged populations and effort to mitigate and improve health outcomes.
3. The public health agency's policies define the **conditions and procedures** for using incident management structures and processes to coordinate agency activities in emergencies.	Conditions and procedures include values and management principles regarding explicit attention to identified and prioritized populations and communities at disadvantage.
4. The public health agency aligns its emergency plans and/or protocols with provincial, territorial and/or federal policy on public health and emergency management.	Aligned emergency plans and/or protocols include explicit details relating to disadvantaged populations, including by sex, age, residence type, proximity to hazard, race and ethnicity. Who is missing?
5. The public health agency's policies describe the authority and procedures under which it would respond to an emergency in a supportive role to the lead agency.	Authority and procedures that include values and principles regarding explicit attention to disadvantaged populations are shared with lead agency.
6. The public health agency's policies define the conditions and procedures for escalating response to an emergency, including processes for declaring an event multi-jurisdictional.	Authority and procedures to escalate response include values, principles and considerations regarding explicit attention to disadvantaged populations.
7. The public health agency is a member of a local/regional multidisciplinary structure that aims to reduce community risks to emergencies and disasters. Network partners involved in this structure may include transportation, planners, industry, local/regional elected officials.	Stakeholders representing disadvantaged populations are included in the leadership, governance and decision-making structures. Who is missing?

8. The public health agency's policies align with requirements for reporting to the provincial/territorial and/or federal public health authority on community health risks in the context of an emergency; for example, radio-nuclear, chemical or biosecurity events.	Risk assessments and reports are explicit about disadvantaged populations and why there are additional risks for certain population groups, including by sex, age, place of residence (e.g., rural), race, ethnicity, place and terms of employment.
9. The public health agency engages with policy-makers to address gaps in policy and/or legislation that pertain to the effectiveness of its emergency management plans and/or protocols.	Risk assessments and reports are explicit about disadvantaged populations and why there are additional risks for certain population groups, including by sex, age, place of residence, race, ethnicity, place and terms of employment.
10. The public health agency's policies define processes for establishing a clear leader in the context of emergency.	The established leader has resources, policies and guidelines to support explicit attention to disadvantaged populations.
11. The public health agency's plans are linked to the mandate of network partners in vertical or horizontal multi-jurisdictional response to emergencies; for example, responsibilities for different levels of government.	Network partners are made aware of the responsibilities to have explicit attention and focus on disadvantaged populations. Disadvantaged populations are well represented in the network and fully involved.
12. The public health agency has defined leadership competencies for individuals that may act as agency leaders in an emergency. These may include: established effective relationships, local knowledge, credible, flexible, trusted, ethical.	All competencies integrate knowledge, skill and attitude to understand, engage with and serve populations experiencing disadvantage. [6] Competency development represents equity/diversity/inclusion approach and is supported by training, guidance and related strategies that include needs and strengths of populations experiencing disadvantage.
Planning Process (6 indicators)	***Do emergency plans and protocols integrate equity considerations with explicit attention to the needs and strengths of disadvantaged populations, including Indigenous peoples? Are these plans aligned with the TRC Calls to Action and do they incorporate culturally safe practices? Do the plans account for intersecting factors like sex, gender, age, geographic location, and socioeconomic status?***
13. The public health agency reviews its emergency plans and/or protocols with involved departments and/or programs internal to the agency.	Reviews of emergency and pandemic plans and protocols include populations that are disadvantaged, and revisions ensure there is explicit attention to the needs and strengths of disadvantaged populations.
14. The roles and responsibilities of the public health agency for responding to all-hazards emergencies are defined in agency plans and/or protocols.	Agency plans and protocols include responsibilities for continued and explicit attention to the needs and strengths of disadvantaged populations, including by First Nations, Métis and Inuit identity, race, age, sex, gender, geographic location (rural, urban, remote), migration status, exposure to hazard, terms of employment.
15. The roles and responsibilities for the public health agency in ensuring business continuity during an emergency are established in agency plans and/or protocols.	Roles, responsibilities and considerations of business continuity consider and are explicit about the needs of workers (including their needs to manage family responsibilities) who are self-employed, in precarious work, or who must work in several settings, by First Nations, Métis and Inuit, sex and age, immigration status, race, ethnicity, as well as dependence on public infrastructure to maintain employment.

[6] See for example: https://phabc.org/wp-content/uploads/2016/02/Final-Health-Equity-Competency-Statements-PHABC-Project-Oct-2011.pdf

16. The public health agency has a process to support priority-setting decisions in the allocation of limited resources in the context of emergencies.	Decision-making process includes questions and prompts for explicit attention to the needs and resilience of disadvantaged populations.
17. The public health agency's emergency management plans and/or protocols relate to all phases of a disaster (i.e. Prevention/mitigation, preparedness, response, and recovery).	Actions to mitigate inequities and contribute to community resilience are integrated in the agency's emergency management plans/protocols for all stages of a disaster.
18. Linkages between the public health agency and network partners' emergency plans and/or protocols are discussed with involved network partners.	Stakeholders representing disadvantaged groups are included in the network and in discussions of plans.
Risk Assessment (5 indicators)	***Are risk assessments explicit about the systemic factors contributing to disadvantage for certain populations? Are data disaggregated by key demographic factors such as sex, age, race, ethnicity, and geographic location? Were the risk assessments developed in partnership with representatives from affected communities?***
19. The public health agency uses the results of the risk assessment to inform relevant plans/protocols for emergency management, business continuity and/or risk reduction.	Plans and protocols for emergency management, business continuity or risk reduction are explicit regarding the needs and strengths of disadvantaged populations. For example, they would include elderly women, First Nations, Métis and Inuit communities, families living near hazards.
20. The public health agency's risk assessment process includes an analysis of organizational capacity to manage the identified risks.	Assessment of organizational capacity and responses includes surge capacity (workforce and mobilization) during outbreaks. Training and processes are explicit regarding populations of interest, including by sex, geographic location, race, ethnicity, income sources, age, First Nations, Métis and Inuit.
21. The public health agency uses locally relevant data to inform risk assessment. Examples of data sources may include: communicable diseases, vector-borne diseases, food and water testing, population health determinants, non-communicable diseases such as injuries.	Data used for risk assessment are collected, available, reported and presented disaggregated by sex, age, co-morbidities, geographic location (rural, remote, urban), First Nations, Métis and Inuit, and race. Data are analyzed and used in ways that reduce potential negative associations and stigma for disadvantaged populations.
22. The public health agency conducts a comprehensive risk assessment for all-hazards emergencies at regular intervals (e.g. annually, or when a new threat is identified) to adapt to emerging risks.	Public health agency ensures that templates and risk assessment materials have places for reporting and information that is explicitly about the needs and strengths of disadvantaged populations.
23. The public health agency's risk assessment process considers the preparedness capacity of populations that may be at increased risk in the context of emergencies.	Representatives of disadvantaged groups are included as partners in the preparedness risk assessment. Process and resulting documents are explicit about the needs and assets of populations in different settings, including by age, sex, race, co-morbidities, geographic and facility residence, First Nations, Métis and Inuit.
Resources (6 indicators)	***Are resources allocated with explicit attention to the needs of disadvantaged populations? Do resource management systems include protocols for equitable***

	procurement and distribution, especially for populations in rural, remote, or underserved areas? Are financial resources sufficient to support the additional needs of these populations, and are they distributed transparently and justly?
24. The public health agency has established procedures to facilitate timely dispensing of physical resources to the community in the context of emergencies (e.g., may include medical prophylaxis and/or treatment).	Plans for timely dispensing include explicit attention to the needs of and opportunities to involve disadvantaged populations, including by geographic location, sex, race, age, First Nations, Métis and Inuit. Cultural safety is considered for what and how resources are dispensed. Assets and resources considered include distance to and availability of food during lockdown, distance to testing, primary health care, hospitals and critical care, as well as availability of reliable internet and transportation.
25. The public health agency has or has access to a dedicated emergency preparedness coordinator, or similar position, led by an individual experienced in emergency management.	Coordinator has cultural safety training and has the authority to request and lead initiatives that explicitly address the needs and strengths of disadvantaged populations.
26. The public health agency has mechanisms to secure or reallocate financial resources to support response to and recovery from an emergency.	Documents and processes relating to reallocation of funds include requirements to describe explicitly how populations with disadvantage will be supported.
27. The public health agency has or has access to a system to support management of physical resources relevant to emergencies; for example, equipment, supplies or medical prophylaxis and/or treatment (e.g. may include tracking, monitoring and/or reporting components).	Systems to manage physical resources include explicit protocols on procurement for and distribution to named disadvantaged populations, including by place of residence and geography, particularly for rural and remote communities.
28. The public health agency is familiar with established procedures for the exceptional procurement of physical resources relevant to the emergency context, including procedures for procurement outside of business hours; for example, equipment, supplies or medical prophylaxis and/or treatment from the provincial, territorial or federal government.	Public health agency is familiar with the established procedures for exceptional procurement related to populations in rural, remote and otherwise hard-to-reach locations.
29. The public health agency has dedicated financial resources to support planning and preparedness activities for emergencies.	Dedicated financial resources are sufficient to support the proportionate needs of disadvantaged populations.
Collaborative Networks (4 indicators)	***Do network partnerships include agencies and representatives focused on disadvantaged populations? Are these partnerships actively contributing to equity-driven decision-making? Are responsibilities to prioritize the health needs of marginalized communities clearly understood by all partners?***
30. The public health agency has mechanisms for contacting network partners in the event of an emergency.	Network partners include representatives of disadvantaged groups. Means of contact and communication include explicit considerations for on-going contact and coordination that take into account community priorities, cultural preferences and potential poor technology service (e.g., rural and remote settings).

31. The public health agency has demonstrated the ability to perform cooperative activities with network partners. This ability may be demonstrated, for instance, during real or simulated emergencies.	Protocols in place to allow network partners to raise additional concerns following drills and to ensure those concerns are addressed in subsequent plans and drills
32. The public health agency has partnerships and/or mechanisms to access specialized expertise relevant to community risks; for example, environmental health, biosecurity, toxicology, transportation companies, legal advice	Partnerships and mechanisms are explicit regarding reach to and inclusion of the expertise of communities and disadvantaged populations. Considerations are broad and include culture and community evidence and knowledge.
33. The public health agency has mutual aid agreements in place with health-sector network partners that describe how resources and/or services will be shared during an emergency, including meeting demands for surge capacity.	Agreements include explicit provisions and processes for assuring availability is equitably provided within an intersectoral network to specific settings, populations and geographic locations. The network includes social services and community organizations.
Community Engagement (4 indicators)	***Are community engagement efforts inclusive of representatives from disadvantaged populations? Is there a commitment to sustained engagement with disadvantaged communities beyond the immediate emergency? Are trust-building measures, such as transparent communication, feedback mechanism, and ongoing support, part of the engagement strategy?***
34. The public health agency provides and/or endorses education programs directed at the public to raise awareness about preparedness for relevant community risks.	Education programs are tailored for a variety of audiences (e.g., format, delivery), taking into consideration languages spoken, literacy levels, cultural safety, availability of on-line technology, and other population-level specifics. Education includes community actions that strengthen and draw from community resilience.
35. The public health agency dedicates time for the continuous development of relationships with community organizations relevant to preparedness for local risks and the agency context; for example, building relationships with members of the public and/or advocacy groups that represent the public.	Relationships include representation from persons with previous/lived experience and consideration of social services in housing, income assistance, economic development, corrections, for example.
36. The public health agency has or participates in an established structure to facilitate inclusion of community considerations in relevant aspects of public health emergency management. For example, a community advisory committee to inform emergency mitigation, planning and/or recovery including members of the public and/or advocacy groups that represent the public.	The “established structure” includes representation by disadvantaged populations and uses structures and mechanisms that facilitate community voice, input and influence at all levels. Public health agency is able to identify "who is missing?" and why.
37. The public health agency and/or its network partners engage with Indigenous communities regarding emergencies and related risks. Engagement may include community-specific risk assessments, plans and/or protocols, and inclusion of Indigenous knowledge where possible and appropriate.	Explicit inclusion of representation and leadership from First Nations, Métis and Inuit communities – including urban dwellers -- integrated throughout plans and protocols for preparedness, response, mitigation and recovery.

Communication (11 indicators)	***Do communication strategies ensure that all messages are accessible and culturally appropriate for local populations? Are diverse platforms used to reach communities with varying levels of technology access? Are community leaders engaged in co-creating messages that reflect the strengths and needs of disadvantaged groups?***
38. The public health agency has a mechanism to formally or informally coordinate joint messaging with relevant network partners in a timely manner.	Joint messaging with network partners includes tailored materials and explicit attention to disadvantaged persons by age, sex, gender, geographic location and setting, as appropriate, including Indigenous ways of knowing as relevant.
39. The public health agency has structures to ensure message consistency with network partners; for example, regular network partner coordination meetings, incident management systems.	Structures for messaging include time and space to receive and present information about disadvantaged populations that is explicit about where those disadvantages lie and how they will be mitigated.
40. The public health agency has capacity for redundancy in communication platforms in the context of an emergency; for example, using alternate platforms in power outages or if regular communication channels are down.	Redundancy capacities include protocols for receiving and presenting information specific to disadvantaged communities and individuals and using mechanisms to equivalently reach disadvantaged communities (e.g., not dependent only on media that are not available widely by geography or income).
41. The public health agency communication strategy uses multiple communication platforms to facilitate timely information-sharing in the context of an emergency; for example, town-hall meetings, websites, social media, spokespersons, information call lines/centres.	Communication platforms are selected to ensure that communities and individuals with systemic disadvantages can be reached and are not based on assumptions of access to media or high quality internet.
42. The public health agency has identified trained spokesperson(s) for the agency relevant to community risks and the emergency context.	Spokespeople have demonstrated understanding and skill in cultural competency and ability to communicate in languages of the community including sign language.
43. The public health agency has access to communications personnel that are dedicated to the emergency and appropriately trained in crisis communication.	Communications personnel have demonstrated understanding and skill in cultural competency and have contacts to assist with appropriate messaging regarding disadvantaged populations.
44. The public health agency has a process for monitoring the media, including social media, to rapidly identify rumours and correct misinformation.	Media monitoring processes include checklists or equivalent for identifying and interrupting misinformation specific to or targeted for communities and individuals that experience disadvantage.
45. The public health agency communication strategy includes plans and/or procedures for ensuring cultural competency and/or sensitivity to impacted communities for relevant risks and the emergency context. This includes procedures for translation of messages to relevant languages.	Plans and procedures for ensuring cultural safety include assurance of skills and knowledge regarding systemic disadvantage and opportunities to mitigate disadvantage.
46. The public health agency has developed communication strategies for multiple audiences in advance of emergencies, based on its risk assessment.	Risk assessments and reports are explicit about disadvantaged populations and why there are additional risks for certain population groups. Communication strategies have been developed in partnership with representative agencies and leaders.
47. The public health agency has a process for the public and media to ask questions and voice concerns; for example, town hall meetings, social media, information call lines/centres.	Processes for public input have been assessed and developed to include time and formats for disadvantaged populations and individuals to participate

48. The public health agency communication strategy includes procedures for directly reaching citizens during an emergency, if required. For example, door-to-door, giving out pamphlets, engaging in informal street/neighbourhood gatherings.	Procedures for directly reaching citizens and other residents have been developed in partnership with representative leaders and agencies, including incorporating information about community strengths and building upon community assets.
Workforce Capacity (7 indicators)	***Do training programs include explicit instruction on health equity, cultural competency, and the specific needs of Indigenous and other disadvantaged populations? Is training focused on intersectionality and structural determinants of health? Is there a process for continuously assessing and updating training to reflect evolving best practices and community needs?***
49. The public health agency has a roster of its workforce available for the management of, or potential for, emergencies on a 24/7/365 basis.	Public health agency roster of available workforce includes persons with demonstrated understanding and skill in cultural safety and the underpinnings of disadvantage; workforce includes persons from disadvantaged populations. Surge capacity for outbreaks is in place.
50. The public health agency has established policies and procedures for supporting staff during an emergency with respect to their health and wellbeing; for example, on personal safety, mental wellbeing, family commitments.	Policies and procedures are explicit regarding the various age- and gender-related responsibilities staff will have and the ways in which these will be supported. These will include supports for staff to provide care for small and school-age children and frail or elderly family, transportation needs, as well as personal protection equipment.
51. The public health agency has a structure and/or mechanism to support multi-disciplinary emergency management relevant to community risks; for example, a multi- disciplinary team of public health professionals, epidemiologists, and environmental health officers.	Multi-disciplinary emergency management team includes representatives and partnerships with disadvantaged populations.
52. The public health agency has a workforce professional development plan for training its staff that is specific to emergency management topics; for example, content of emergency plans/protocols, incident management systems, communications.	Workforce professional development training includes understanding and skills in cultural competency and safety, racial equity, fostering partnerships with representatives of disadvantaged populations, and approaches to mitigate disadvantage for and with populations.
53. The public health agency workforce has demonstrated the ability to perform cooperative activities as an organization in the context of emergencies. This may be demonstrated, for instance, during exercises or activations.	Exercises and activations to demonstrate cooperative ability explicitly include partnerships and representatives of named disadvantaged populations.
54. The public health agency has an up to date inventory of staff trained in emergency management topics; for example, content of emergency plans/protocols, incident management systems, communications.	Staff training inventory includes cultural competency and safety. Roster explicitly includes persons with knowledge and experience by age, sex, gender, physical ability, First Nations, Métis and Inuit, according to the population within the authority's jurisdiction.
55. The public health agency conducts needs assessments regularly to determine the emergency management training needs of its workers.	Staff training assessments are explicit in the capability of the workforce to understand and demonstrate skill in partnering with disadvantaged populations and working with them to mitigate disadvantage.

Surveillance and Monitoring (4 indicators)	***Are robust monitoring and evaluation processes in place to assess the effectiveness of equity-driven initiatives? Do these processes include feedback loops with disadvantaged communities? Are data disaggregated by key demographic factors to track progress in addressing systemic inequities? Are adjustments made as necessary to improve outcomes?***
56. The public health agency has the capability for or access to enhanced and/or event-based surveillance systems relevant to local/regional risks.	Surveillance system is capable of recording and presenting data by age, sex, race, ethnicity, income, and exposure to risk by geography.
57. The public health agency has protocols and/or processes for information-sharing with network partners for purposes of surveillance of relevant risks; for example, with agricultural, veterinary or environmental surveillance systems.	Sharing capabilities and procedures are explicit regarding presenting disaggregated data in full to, and with, communities experiencing disadvantage.
58. The public health agency uses a syndromic surveillance and/or other early warning systems to detect potential public health emergencies in a timely manner.	Development and implementation of early warning systems meaningfully include partnerships and input from populations that are disadvantaged, and seek to detect inequities in emergency effects and consequences.
59. The public health agency has the capability to conduct rapid health risks and/or needs assessments for communities recently impacted by emergencies.	Rapid health risk and needs assessments are done in partnership with disadvantaged populations and explicitly include factors raised by their representatives, and seek to identify inequities in emergency effects and consequences.
Learning and Evaluation (3 indicators)	***Are learning and evaluation processes designed to explicitly assess equity outcomes? Does the evaluation include an assessment of the organization's capacity to address health equity, including cultural competency, understanding of structural determinants, and the ability to engage with Indigenous and other marginalized communities?***
60. The public health agency applies a self-assessment process to emergency management. This process may be applied to tests, exercises, simulations and/or emergency plan activations and agency responses.	Public health agency self-assessment processes include explicit checks on ability to include and reflect needs and risks of disadvantaged populations and to leverage community assets.
61. The public health agency self-assessment process is used to identify capabilities, strengths and/or assets to describe successes relevant to emergency management.	Self-assessment processes include ability to articulate and describe strengths and successes relevant to disadvantaged populations, including by sex or gender, race, First Nations, Métis or Inuit, geography and/or exposure to risk.
62. The public health agency self-assessment process is used to inform improvement actions; for example, identifying responsible groups for corrective actions and establishing timelines for change.	Self-assessment processes include ability to articulate improvements needed and timely corrective measures to be taken relevant to disadvantaged populations, including by sex or gender, race, First Nations, Métis or Inuit, geography and/or exposure to risk.

Practice and Experience (5 indicators)	***Are practice exercises and drills designed and conducted with explicit attention to the participation and needs of disadvantaged populations? Do these exercises include scenarios that test the organization's ability to address intersectional vulnerabilities (e.g., race, gender, age, socioeconomic status)? Are past experiences and lessons learned reviewed through an equity lens? Is there a process to incorporate these reflections into future practice to continuously improve the organization's ability to serve disadvantaged populations?***
63. The public health agency practices its plans and/or protocols that are relevant to emergency management; for example, the agency emergency response plan, the business continuity plan. Practice may include table top exercises, simulations, or activations for emergencies.	Public health practice sessions include representatives from partner organizations including those from disadvantaged communities. Practices are developed in partnership with those representatives.
64. The public health agency conducts regular needs assessments to determine the needs for organizational practice of emergency plans and/or protocols; for example, the emergency response plan, the business continuity plan. The assessment may consider recent table tops, exercises, simulations, or activations in response to emergencies.	Regular needs and situational assessments are conducted in partnership with representatives of disadvantaged populations, and explicitly inquire about and respond to their needs for practice.
65. Public health agency management and staff have demonstrated the ability to adjust plans and/or protocols for emergencies in the context of new knowledge, uncertain science, and/or differences in professional opinions. This ability may be demonstrated during real or simulated emergencies.	Public health practitioners are trained in complex adaptive systems, human rights and intersectional analysis across factors such as disability, age, race/ethnicity, migration status, socioeconomic status and geography.
66. The public health agency has sufficient resources to practice plans and/or protocols relevant to emergency management; for example, the emergency response plan, the business continuity plan. Practice may include table tops, exercises, or simulations.	Resources available for practices include involvement of representatives of disadvantaged populations during planning and implementation.
67. Public health agency practice of emergency management activities (e.g., table tops, exercises, simulations) includes the regular attendance of both management and staff.	Management and staff participate in practice components and exercises including those specific to disadvantaged populations, including by age, sex, gender, race, ethnicity, geographic location, migration status and exposure to hazards.

Conclusion

Canada's stated values and priorities to support the needs of all populations during a pandemic are perhaps better articulated and documented than in the past. However, public health organizations throughout the country continue to need support and guidance to explicitly consider and integrate the particular circumstances of populations that are at a disadvantage – those who have fewer economic, social and political privileges than others.

Effective integration of equity considerations into pandemic planning, response and recovery – and for equity considerations to be a key driver of decisions in emergencies – requires that equity considerations be integrated in all public health planning, all of the time. Incorporating – truly operationalizing – a health equity lens requires a resilient public health system at the local, provincial, territorial, federal and global levels. Resilient public health organizations are those that have governance, protocols, authority, accountability and established relationships to involve community members and representatives – including and especially representatives from communities experiencing disadvantage – and at every point in emergency planning, response and recovery. Using the indicators and equity prompts will support public health organizations to become resilient organizations as well as identify and develop needed resources.

Engagement of community representatives ensures essential questions are raised, specific voices are sought and heard, and decisions are evidence informed at all points and in all stages of pandemic preparedness and response. These four questions [67] remain fundamental to centring health equity in public health decision-making:

1. Which groups or settings are likely to be disadvantaged in relation to an option being considered?
2. Are there anticipated differences in the relative effectiveness of an option for disadvantaged groups or settings? If yes, what are they?
3. Are there different baseline conditions across groups or settings such that the effectiveness of an option would be different, and/or the problem more or less important, for disadvantaged groups or settings? If yes, what are those conditions?
4. Are there factors that need to be considered when implementing an option to ensure inequities are not increased and, if possible, reduced? If yes, what are those factors?

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