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Public Health Surveillance Vision 2030: Moving Data to Public Health Action

Process and Findings

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Declaration of Interests

- I, David Buckeridge, declare the following interests in the context of the subject of this presentation:
 - Employee:
 - McGill University, McGill University Health Centre
 - Public Health Agency of Canada (PHAC)
 - Research Support:
 - Canadian Institute of Health Research (CIHR)
 - Fonds de Recherche du Québec – Santé
 - Ministère de l'Économie, de l'Innovation et de l'Énergie
 - Board Member:
 - ICES, NCC Determinants of Health

Learning Objective

1. Describe the method and efforts involved in developing a collaborative vision for public health surveillance in Canada by 2030.
2. Identify the vision components, including the desired states and characteristics of a high-functioning public health surveillance “system of systems”.
3. Recognize opportunities for action that address the persistent challenges identified and ongoing efforts that contribute to advancing Vision 2030.

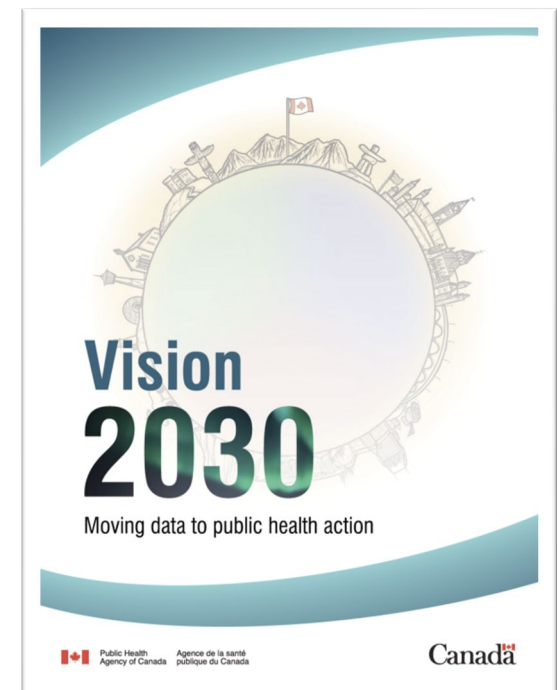
Vision 2030: Moving Data to Public Health Action

Canada needs a renewed vision for public health surveillance

- Last published vision in Canada was in 2016¹
- Lessons learned from the COVID-19 pandemic
- New/re-emerging health threats, new data governance norms and data sources, and innovations in data collection methods and analytic techniques
- Other countries have or are currently re-envisioning public health surveillance Public Health England², US Centers for Disease Control³, NITI Aayog⁴

Vision 2030

- PHAC-led Initiative that aimed to develop a vision for public health surveillance in Canada by 2030 that is informed by an inclusive, multi-stakeholder engagement approach
- The goal of Vision 2030 was to develop a vision for public health surveillance in Canada that is: **aspirational, inclusive, non-binding**, and **action-oriented**



¹[Blueprint for a Federated System for Public Health Surveillance in Canada: Vision and Action Plan 2016](#)

²[Public Health England: Public Health Surveillance: Towards a Public Health Surveillance Strategy 2017](#)

³[US CDC Data Modernization Initiative 2020](#)

⁴[NITI Aayog Vision 2035 Public Health Surveillance in India](#)

Approach to Developing the Vision

- Engaged **1,740 participants** to discuss **challenges and opportunities** for public health surveillance across Canada
 - Completed 29 in-person, virtual, and academic meetings featuring 813 participants, with a further 927 participants answering a public engagement survey
- Commissioned a **rapid review**¹, **literature review**², and **summary of discussions from regional consultations**³ and co-hosted a **Best Brains Exchange**⁴ with CIHR
- Challenges and opportunities were validated by a purpose-built **surveillance expert round table (SERT)** using a modified-Delphi process



In-person meeting in Thunder Bay, ON



¹[Rapid Review: What are the latest innovations in public health surveillance methods?](#)

²[Considerations, implications, and best practices for public health surveillance in Indigenous communities](#)

³[Public Health Surveillance 2030 Report on Regional Consultations](#)

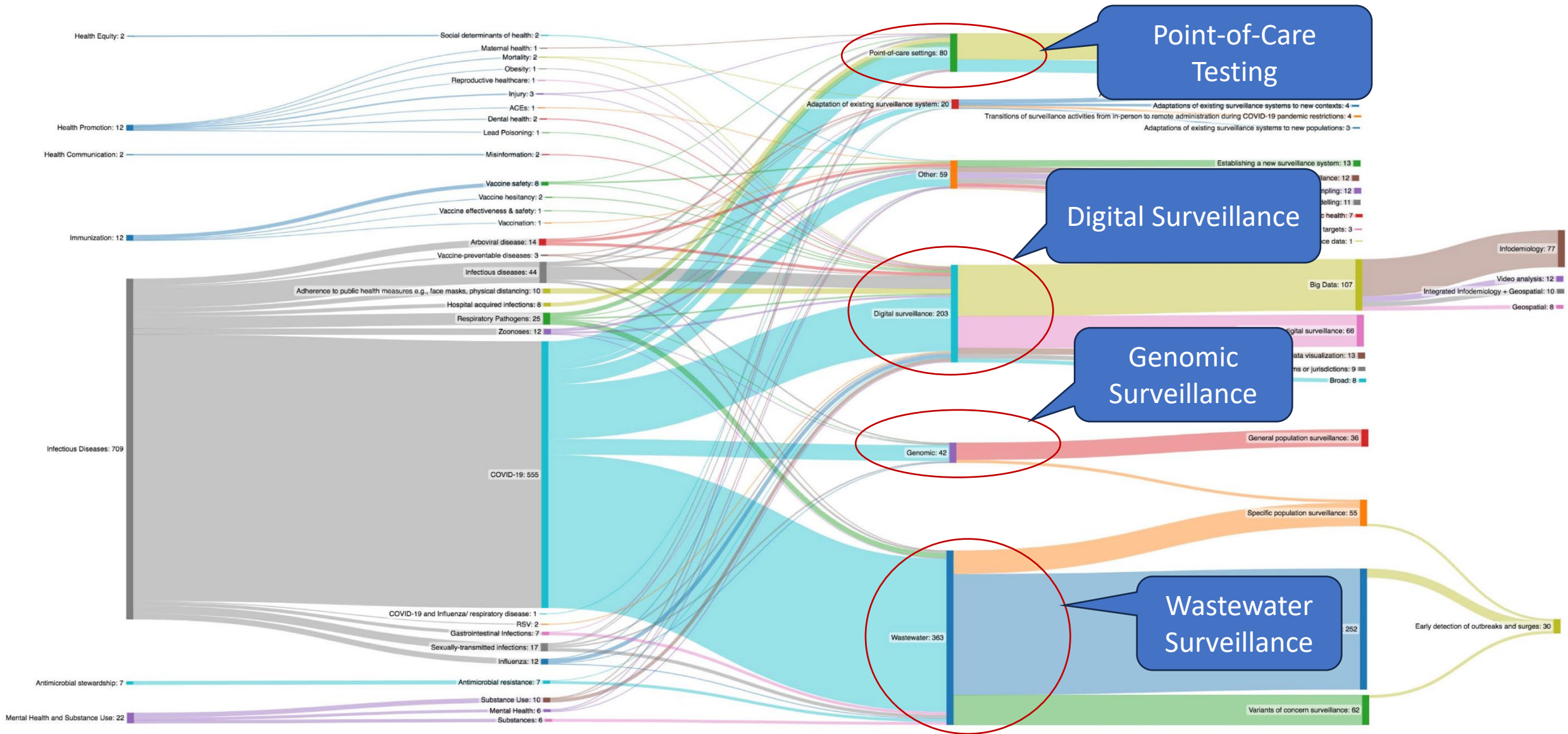
⁴[Best Brains Exchange what we heard report: A vision for the future of public health surveillance in Canada by 2030](#)

Consultation Process and Products

- Vision 2030 adopted a variety of methods and engaged ~1,800 participants to inform the development of this report, including [public](#) and [technical](#) discussion guides for the [online public consultation](#), in-person and virtual consultations, literature reviews and development of commission papers.

<p>Commissioned papers by NCCs</p>				<p><i>Manuscript in preparation by NCCIH:</i> Key informant interviews with Indigenous Peoples and communities on surveillance</p>	<p>Co-hosted an International Best Brains Exchange with CIHR</p>
<p>Dedicated sessions at Canadian Public Health Association (CPHA) conferences and the Surveillance Advances series</p>				<p>Additional planned sessions</p>	

Published Surveillance Innovations (2018-2023)



Trends driving the future of public health surveillance



Digital transformation

Empowering public health surveillance in Canada to be more timely, accurate, collaborative, and comprehensive in addressing current and emerging health challenges (e.g., data infrastructure to support interoperability)



Global health surveillance

Critical to health security and a strong public health system that can adapt to the rapidly changing and complex landscape of health in Canada and the world (e.g., the Global Public Health Intelligence Network)



New sources of data

Deriving public health insights using new and unconventional sources of data (e.g., participatory surveillance systems such as crowdsourcing and crowd-mapping, and the Antimicrobial Resistance Network (AMRNet) that uses an integrated One Health approach and combines data from humans and animals to analyze antimicrobial resistance)



New tools

COVID-19 led to new surveillance methods and networks that provide timely and accurate information to inform public health decision-making, outbreak management, and vaccine development (e.g., Pan-Canadian Wastewater Surveillance Network and Canadian COVID-19 Genomics Network (CanCOGeN))

We've been from coast to coast to coast listening to stakeholders

29 facilitated engagements

13 in-person meetings, 11 virtual meetings, 4 academic meetings

➔ **Attendees:** Directors/Head of Organizations, Program Managers/Coordinators, Public Health Nurses, Academic Researchers, Epidemiologists, MOHs/Public Health Physicians, Educators, Laboratory, distinctions-based, digital health, KT specialists, Policy Analyst, Health promoters, Students, Public Health Inspectors, Dieticians, and First Nations, Inuit, and Métis people

1743 participants

816 participants from regional engagements and 927 individuals who participated in the [Online Questionnaire](#) hosted on the "Consulting with Canadians" webpage. Questionnaire closed on March 1, 2024.

➔ **Questionnaire respondents:** Public, healthcare provider, public health practitioner, allied health professionals, academic and research, government administrator or policy maker, health industry professionals, NGOs, healthcare administrator, community health worker/advocate, First Nations, Inuit and Métis health related organizations/groups



We asked them a list of guiding questions



Challenges & Solutions

e.g., What are the gaps that must be addressed and their solutions? What stage of the surveillance cycle presents the most challenges to improving surveillance in Canada? What changes are needed to achieve a vision from the current state? What could make it easier, more appealing for university-based faculty to conduct research on surveillance?



Elements of Success

e.g., What is already in place that is working or can be strengthened?; Do you see any opportunities for collaboration within and across public health surveillance programs? What are important evidence gaps in surveillance methods that academic researchers are well suited to address?



Envision the future: Vision

e.g., In a perfect community/region/province/Canada, what will we have in place that will make public health surveillance effective and sustainable?; What does this vision look like in terms of ethics, equity and data ownership specific to First Nations, Inuit and Metis populations? What does this look like in terms of responsibility for community and involvement and engagement?; Describe what a high-functioning surveillance ecosystem in Canada could look like by 2030.

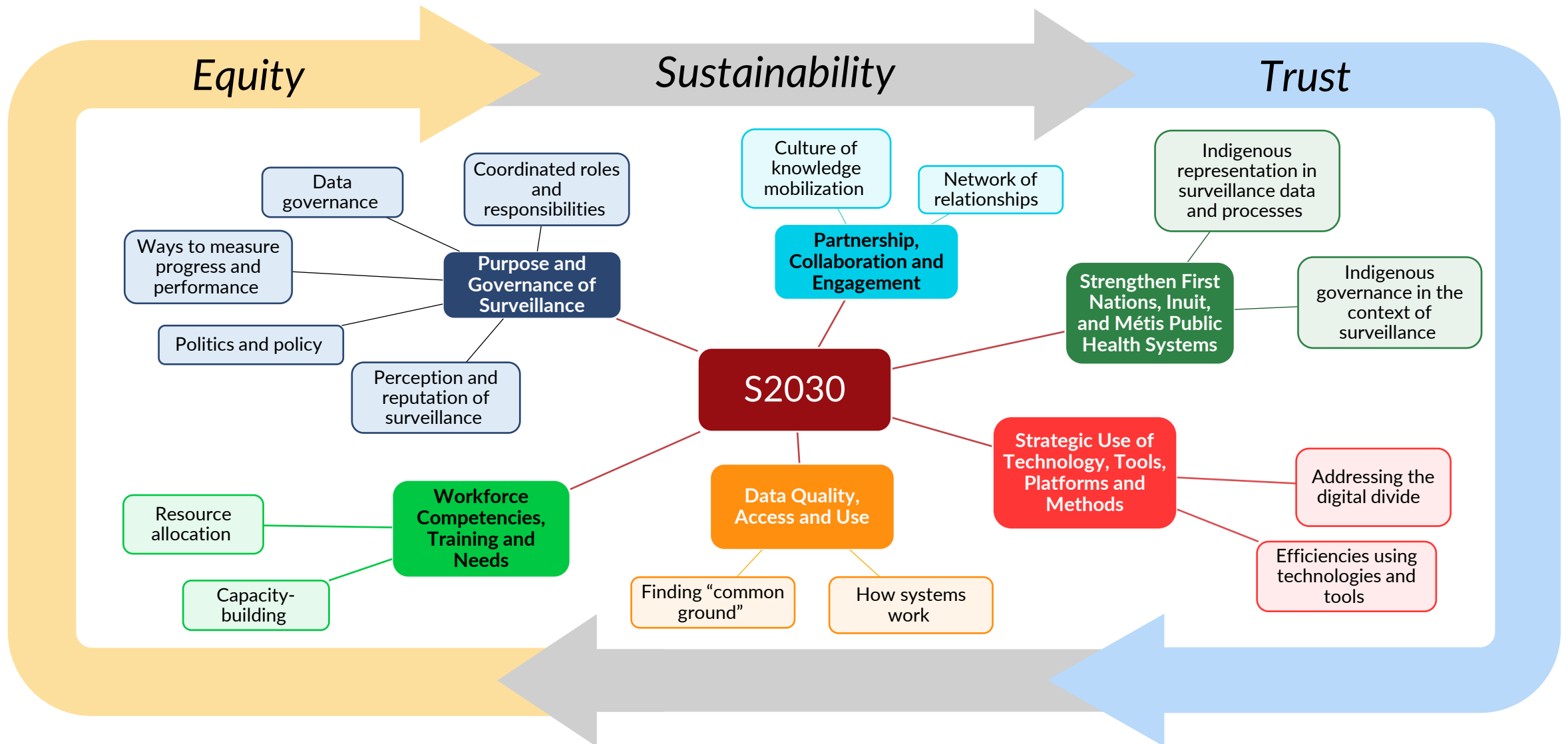


Here, There & Elsewhere

e.g., Where do you have discretion and freedom to act? What can you do without more resources or authority?; What can you encourage others to do? What do you need from leadership? What is needed from other players? Other sectors?; Are there existing or planned training programs at your institution that include content focussed on competencies related to surveillance?

Overview of what we heard

To uncover insights from our consultations, we conducted a thematic analysis to distill information into meaningful themes. The following themes form the basis for the articulation of a vision.





Challenge 1: Purpose and Governance of Surveillance

Challenge

Surveillance systems and the national surveillance ecosystem require clear purposes and governance to meet their objectives and adapt to changing circumstances.

“ *...some undercurrents of mistrust between provincial (or territorial) surveillance with the perceived use and access to national level data – this needs to be addressed to build more cohesive national surveillance systems.* ”

PHAC Employee - PHAC Surveillance Community of Practice General Meeting, September 12, 2023

What we aim to achieve

Public health surveillance should have a clearly articulated function and purpose, with all actors understanding their roles and responsibilities. Decision-making processes and structures should be transparent, sustainable, and well-funded to promote trust and continuity.

“ *... the division of roles and responsibilities between the federal and provincial levels with regard to monitoring efforts needs to be better articulated.* ”

Online consultation response - *Consultation: A vision for public health assessment for Canada's future*



Challenge 2: Partnerships, Collaboration, Engagement

Challenge

Collaboration and engagement between communities and public health providers is insufficient to support public health assessment and response.

“ Strengthening and renewing the information sharing agreements with PT surveillance partners that underpin future surveillance work and negotiating technical aspects (e.g., data standards, formats, and meeting reporting deadlines, etc.) so that **data shared to national-level is uniform and consistent across all jurisdictions** especially for case-based infectious diseases ”

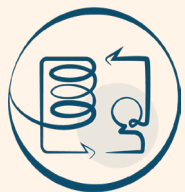
Academic partner - Academic consultation

What we aim to achieve

Relationships between all actors within and across jurisdictions should be built on trust, intersectionality, meaningful engagement, feedback loops, willingness to share information, and sustainable investments.

“ We need to move beyond community engagement to **meaningful and reciprocal community partnerships**. Diverse population groups who are disproportionately impacted by public health issues have the right to own and use their data so that they are **empowered to build capacity within their communities** and address persistent and emerging public health issues. ”

Online consultation response - Consultation: A vision for public health assessment for Canada's future



Challenge 3: Data Quality, Access and Use

Challenge

Outdated and fragmented systems are causing poor data quality and lowering the quality of information for responding to public health threats.



Siloed data systems and data privacy concerns often results in data being unavailable to those best positioned to analyze and interpret data, including front line public health experts and researchers.



Online consultation response - *Consultation: A vision for public health assessment for Canada's future*

What we aim to achieve

Effective data management through common standards and processes, and investing in systems that enable timely, transparent, inclusive, and ethical data collection, access and sharing.



With the right protections in place, standards and information sharing agreements, then one system for all of Canada would go miles in advancing timeliness in accessing national-level data for surveillance activities such as assessing risk (for emerging outbreaks/ health events), conducting analyses and routine reports.



PHAC Employee - *PHAC Surveillance Community of Practice General Meeting, September 12, 2023*



Challenge 4: Strategic Use of Technology, Tools, Platforms, and Methods

Challenge

Gaps in the use of technology, tools, platforms, and methods lead to inefficient surveillance workflows and hinder collaboration.



*We need to look to the **higher-level leadership** to support bringing in **new tools or technology** for the **benefit of all surveillance programs**, so that we all not competing for the same small pools of funding to make minimal improvements e.g., if one program area is using the latest technology, can we not apply it to other programs and share expertise?*

PHAC Employee - PHAC Surveillance Community of Practice General Meeting, September 12, 2023



What we aim to achieve

Effective and equitable implementation of new and existing technological solutions to improve and sustain robust surveillance processes.



*[Participants indicated that they would like to] see a **simplified and user-friendly interface for data providers**. Leveraging AI and automation tools in their work. Integrating modelling approaches and implementation of science with surveillance information to adapt to evolving public health data needs.*

Online consultation response - Consultation: A vision for public health assessment for Canada's future





Challenge 5: Workforce Competencies, Training and Resources

Challenge

Efforts to advance surveillance practice across the country are limited by insufficient workforce capacity, constrained resources and training gaps.



*...There appears to **high staffing turnover, or shortages** everywhere and we need to ensure we collaborate to retain qualified staff that can do this work, provide satisfying work activities that support their career advancement.*



PHAC Employee - PHAC Surveillance Community of Practice General Meeting, September 12, 2023

What we aim to achieve

Aligning workforce competencies, training and sustainable resource allocation with public health priorities, including diversity in the workforce.



*To have this surveillance, PHAC and governments need **transdisciplinary teams** that include communications, clinical epidemiology, and public health expertise and many other disciplines.*



Participant – Regional consultation



Challenge 6: Build respectful partnerships with First Nations, Inuit and Metis people, communities and organizations

Challenge

There is limited capacity to monitor health and well-being by First Nations, Inuit and Métis (FNIM) peoples for FNIM peoples.

“ As a Consultant with First Nations communities [...] I often run into **many gaps when trying to triangulate and supplement the qualitative data** that I've collected directly through engagement with the community with the quantitative statistics that exist on the community I am working for. ”

Online consultation response - Consultation: A vision for public health assessment for Canada's future

What we aim to achieve

Strengthening FNIM representation by integrating data, knowledge and public health systems, and supporting Indigenous groups to establish their own governance structures and practices according to their needs.

“ ... it is vital to **utilize and embed OCAP (Ownership, Control, Access, and Possession)** when co-creating with Indigenous communities. Moreover, being clear that folks carrying out the community engagements understand the projects intention along with their own intentionality and (un)learning journey needed to work with communities and the data that will come out of it. **Local communities also need transparent communication** throughout the engagement process to understand where the data collected is/has gone. ”

Online consultation response - Consultation: A vision for public health assessment for Canada's future

Vision Statement

*An adaptable and collaborative
public health surveillance ‘system of systems’*
resourced to provide **timely insights for actions**
that improve health and reduce inequities
for all peoples in Canada.*

Desired States



Unified purpose and governance: A public health surveillance ‘system of systems’ with a clear purpose for each system and the collection of systems, understood by all partners and supported by robust governance structures that enable authorized access to high-quality, timely surveillance data to inform public health action.



Inclusive partnerships: Equity-deserving groups, including rights-holders, are active partners in the development, maintenance, and utilization of knowledge and evidence generated by public health surveillance systems.



Well-supported workforce: A workforce equipped to meet evolving public health demands, applying appropriate methods and technologies to data and information with sufficient granularity to understand and improve health equity.

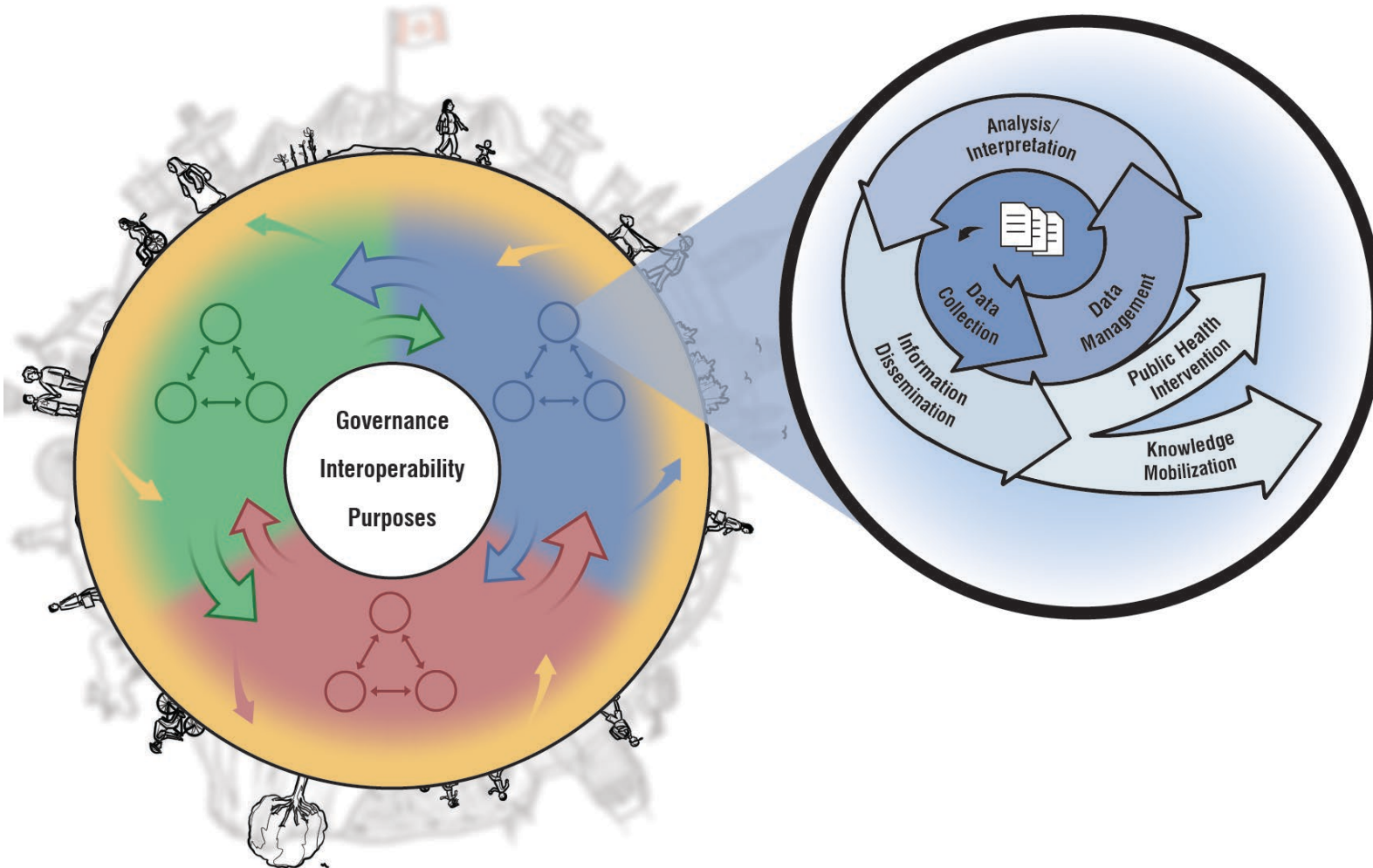


Integrated health information: Health information that is generated, interpreted and shared across systems in a coordinated, consistent, and reciprocal manner across all surveillance functions and partners.



Operational efficiency: Surveillance processes that maximize the use of appropriate data infrastructure, technologies, and resources.

Public Health Surveillance 'System of Systems'



- A Federated System of Systems is aligned with:
- Pan-Canadian Health Data Charter
 - Political Federation
 - Indigenous Data Sovereignty
 - Collaborative surveillance

Key findings from Vision 2030

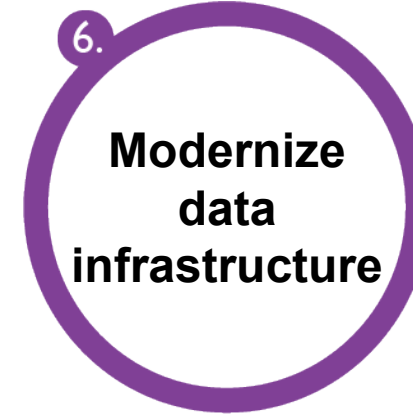
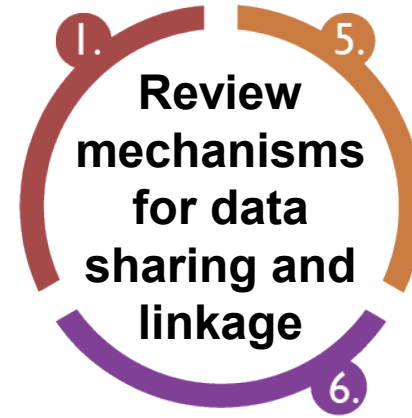
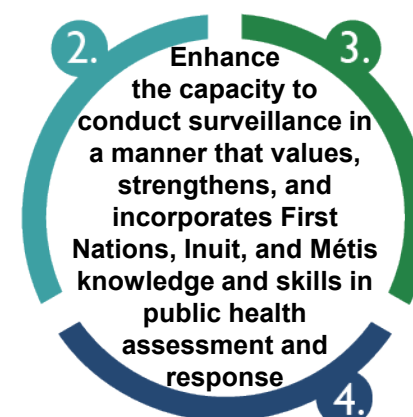
Challenges

-  1. Purpose and governance of surveillance
-  2. Partnerships, collaboration, and engagement
-  3. Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations
-  4. Workforce competencies, training, and resources
-  5. Data quality, access, and use
-  6. Strategic use of technology, tools, platforms, and methods

Opportunities for Action

1. Develop governance frameworks
2. Enhance surveillance systems by integrating social determinants of health
3. Foster collaboration and build trust with communities
4. Create the conditions to implement First Nations, Inuit, and Métis health data sovereignty
5. Enhance the capacity to conduct surveillance in a manner that values, strengthens, and incorporates First Nations, Inuit, and Métis knowledge and skills in public health assessment and response
6. Invest in First Nations, Inuit, and Métis health information systems, infrastructure, and indicators
7. Support workforce development
8. Promote interoperability through data standards
9. Review mechanisms for data sharing and linkage
10. Modernize data infrastructure

Opportunity for Action



Opportunity for Action #1:



Develop and share governance frameworks, including example data sharing agreements, which can be adapted by surveillance programs to clearly describe roles and alignment with public health goals.

Addressing
challenge:



1.

**Purpose and
governance
of surveillance**

Opportunity for Action #2:



Adapt and develop public health surveillance systems to routinely collect, incorporate, and analyze data on social determinants of health to deepen the understanding of health inequities across specific populations and enable targeted actions that expand access to opportunities and create environments supportive of health for all.

Addressing challenges:



1.

Purpose and governance of surveillance



5.

Data quality, access, and use

Opportunity for Action #3:



Build trust with community leaders and organizations as the foundation of meaningful partnerships for public health surveillance.

Addressing challenges:



2.

Partnerships, collaboration, and engagement



3.

Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations

Opportunity for Action #4:



Create the conditions to implement First Nations, Inuit, and Métis health data sovereignty by working together with Indigenous health monitoring experts to advance effective health information systems

Addressing challenges:



1. Purpose and governance of surveillance

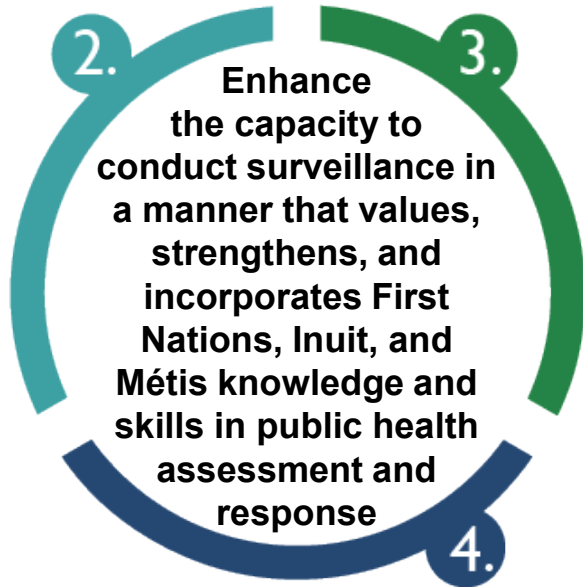


3. Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations



5. Data quality, access, and use

Opportunity for Action #5:



Enhance the capacity for public health surveillance by First Nations, Inuit, and Métis communities in a manner that recognizes and builds on their existing strengths while in turn expanding First Nations, Inuit, and Métis expertise in public health assessment and response throughout the public health surveillance ecosystem.

Addressing challenges:



2.

Partnerships, collaboration, and engagement



3.

Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations



4.

Workforce competencies, training, and resources

Opportunity for Action #6:




Solidify commitment to First Nations, Inuit, and Métis streams of public health assessment and response to well-being, including the development of distinctions-based health information systems, infrastructure, and indicators.

Addressing challenges:



3. Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations



5. Data quality, access, and use



6. Strategic use of technology, tools, platforms, and methods

Opportunity for Action #7:



Support public health workforce development to improve access to training opportunities including in rural and remote communities and populations, and support a modernized skilled and diversified public health surveillance workforce.

Addressing
challenge:



**4. Workforce
competencies, training,
and resources**

Opportunity for Action #8:



Enhance interoperability among surveillance data systems, devices, and programs across jurisdictions and local partners by establishing collaboratively developed data standards.

Addressing challenges:



1.

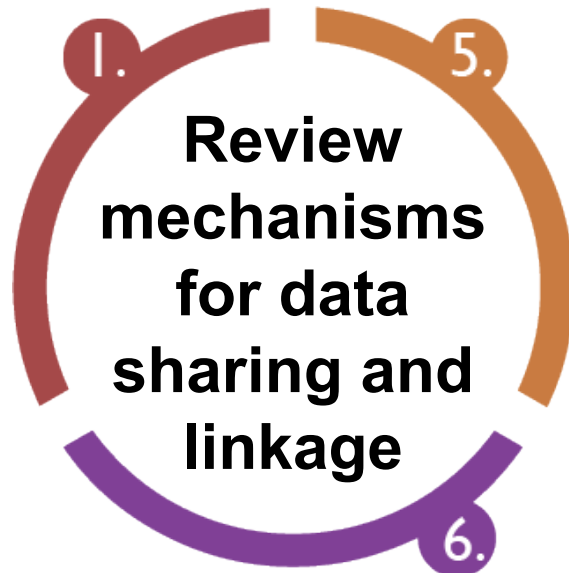
Purpose and governance of surveillance



5.

Data quality, access, and use

Opportunity for Action #9:



Review and revise existing mechanisms for data sharing and linkage, both legal (e.g., legislation and multilateral agreements) and technological (e.g., protocols for automated data exchange), to encourage agile and responsible use of granular data to address health inequities.

Addressing challenges:



1. Purpose and governance of surveillance

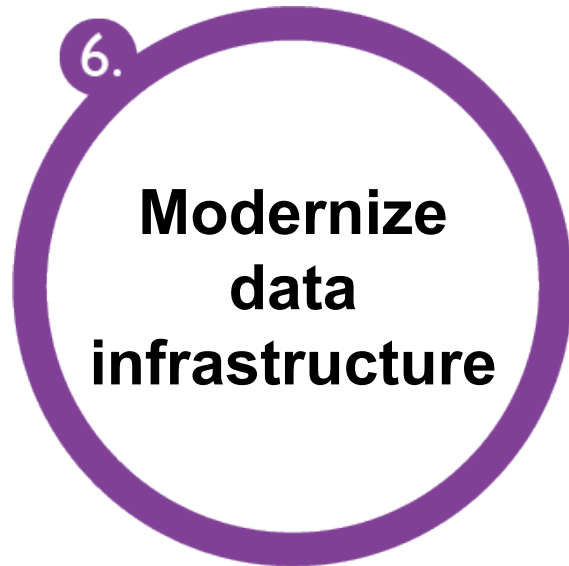


2. Partnerships, collaboration, and engagement



6. Strategic use of technology, tools, platforms, and methods

Opportunity for Action #10:



Continue to modernize, maintain, and upgrade data infrastructure (e.g., innovative technology with proper updates and maintenance) to transform surveillance processes across public health partners.

Addressing
challenge:



6. **Strategic use of
technology, tools,
platforms, and methods**

Next Steps for Vision 2030

1. Knowledge mobilization activities underway

- Presented at CPHA 2025 and other relevant fora
- Preparing manuscripts for the academic and scientific community

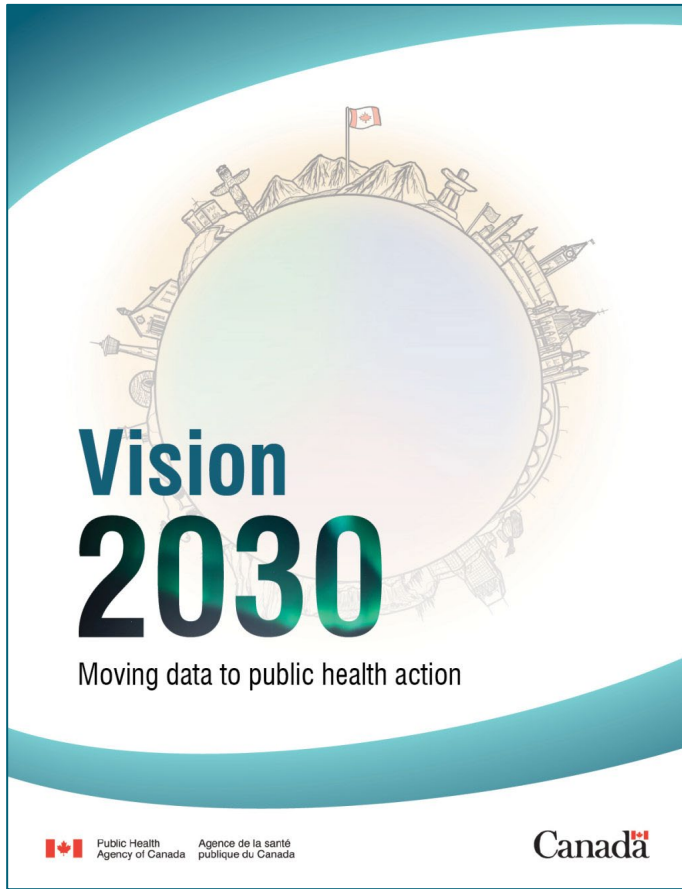
2. Operational planning to continue alignment with Opportunities for Action

- PHAC is continuing to assess the alignment of its activities against Vision 2030, as well as to identify gaps and opportunities for collaboration

3. Identifying ways to continue to engage with PTs on Opportunities for Action

- Engaging with existing FPT tables such as PHDSC and PHN to share initial directions and identify relevant impacts and needs from PT perspectives
- Providing periodic updates at FPT tables to increase operational transparency and demonstrate progress against goals

Vision 2030 final report



Vision 2030

Moving Data to Public Health Action

An adaptable and collaborative public health surveillance 'system of systems' able to provide timely insights for actions that improve health and reduce inequities for all people in Canada.

System of Systems

...an envisioned high-functioning public health surveillance 'system of systems'

Desired States

...the aspirational conditions of the envisioned public health surveillance 'system of systems'

- Unified purpose and governance
- Well-supported workforce
- Inclusive partnerships
- Integrated health information
- Operational efficiency

Challenges

...capture a distinct facet of the ideas, desires and frustrations that emerged from the qualitative analysis of consultation results

- Purpose and governance of surveillance
- Partnerships, collaboration and engagement
- Build respectful partnerships with First Nations people, Inuit, and Métis people, communities, and organizations
- Workforce competencies, training, and resources
- Data quality, access, and use
- Strategic use of technology, tools, platforms, and methods

Opportunities for Action

...to make progress against the challenges in public health surveillance identified through the consultation and expert validation

- Develop governance frameworks
- Enhance surveillance systems by integrating social determinants of health
- Foster collaboration and build trust with communities
- Create the conditions to implement First Nations, Inuit, and Métis health data sovereignty
- Enhance the capacity to conduct surveillance in a manner that values, strengthens, and incorporates First Nations, Inuit, and Métis knowledge and skills in public health assessment and response
- Invest in First Nations, Inuit, and Métis health information systems, infrastructure, and indicators
- Support workforce development
- Promote interoperability through data standards
- Review mechanisms for data sharing and linkage
- Modernize data infrastructure

Acknowledgements

We extend our gratitude to everyone who dedicated their time and effort to contribute their insights and experiences to the development of Vision 2030.

Thank you!



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