Surveillance Advances

Bridging the Gaps: A Vision for Public Health Surveillance in Canada

September 26, 2023 12:00 – 1:00pm (CT) / 1:00 – 2:00pm (ET)

Speakers

Dr. Yoav Keynan Scientific Lead, National Collaborating Centre for Infectious Diseases

Dr. David Buckeridge Executive Scientific Director, Corporate Data and Surveillance, Public Health Agency of Canada

National Collaborating Centre for Infectious Diseases

Centre de collaboration nationale des maladies infectieuses

Public Health Agency of Canada

Agence de la santé publique du Canada

Land Acknowledgment: NCCID

The National Collaborating Centre for Infectious Diseases is hosted by the University of Manitoba, on the original lands of Anishinaabe, Cree, Oji-Cree, Dakota and Dene peoples, and on the homeland of the Métis Nation.

At NCCID, we strive to honor the lands and their original caretakers in our work. We acknowledge that we are on Treaty One land. We recognize that this and other treaties, have been implemented as part of the process of colonization intended to benefit some while harming others. We are committed to working with our partners towards reconciliation.

Housekeeping

- Seminar recording and presentation slides will be available shortly after the seminar at the NCCID website: https://nccid.ca/
- If you have technical problems with Zoom, please email us at nccid@umanitoba.ca
- The chat box for participants has been disabled for this session. We will use the chat box to share additional information.
- Please use the Q&A tab to submit your questions for our speakers
- You can “like” other people’s questions to push them up in priority

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Accreditation

Surveillance Advances is a self-approved group learning activity (Section 1) as defined by the Maintenance of Certification Program of the **Royal College of Physicians and Surgeons of Canada**.

The seminar series is also approved by the Council of Professional Experience for professional development hours for members of the **Canadian Institute of Public Health Inspectors**.

If you would like a letter of participation, please complete the survey which will be shared after the seminar.

Land Acknowledgment: PHAC

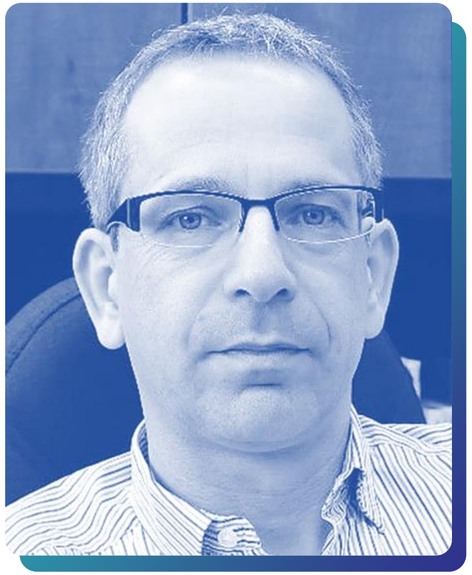
I would like to take this time to acknowledge the land that I live and work on is the traditional territory of the Wendat, the Anishnaabeg, Haudenosaunee, Métis, and the Mississaugas of the Credit First Nation.

It is home to many First Nations, Métis, and Inuit peoples. I am grateful for the opportunity to share their home.

Introducing Surveillance Advances!

Bridging the Gaps: A Vision for Public Health Surveillance in Canada

Today’s speakers



Dr. Yoav Keynan
MD, PhD

Scientific Lead,
National Collaborating Centre for Infectious Diseases

Winnipeg, MB

Yoav.Keynan@umanitoba.ca

Dr. David Buckeridge
MD, PhD, MSc

Executive Scientific Director
Corporate Surveillance and Data Branch, Public Health Agency of Canada

Montreal, QC

David.Buckeridge@phac-aspc.gc.ca

Learning Objectives

- Understand the **foundations of public health surveillance**, including their importance in addressing public health threats and promoting population health and well-being.

- Describe **current gaps and future opportunities for public health surveillance** in Canada.

- Discuss **how you can contribute to the development of a vision for public health surveillance** in Canada.

Public Health Surveillance in Canada – Where are We?

Dr. Yoav Keynan
Associate Professor, University of Manitoba
Head, Section of Infectious Diseases
Scientific Director, National Collaborating Centre for Infectious Diseases

Conflicts of interest

No relevant COI to disclose

Polling Question

In a few words, can you describe what public health surveillance means to you?

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Public health surveillance definitions

Public health surveillance is:

*"... the **continuous**, **systematic collection**, **analysis** and **interpretation** of **health-related data** essential to **planning, implementation, and evaluation of public health practice**, with **prompt dissemination** of results to those who need to know, particularly those who are in a position to **take action**."*

(CDC, 2018; WHO, 2023)

Public health surveillance definitions

- Public health surveillance is a core function of public health
- Generating the data and information needed to detect and understand health conditions
- Understanding the epidemiology is essential to protecting population health

Public health surveillance definitions

- Surveillance is 1 of 6 core public health functions and an important tool to guide public health actions
- Critical for resource planning and allocation to programs
- Guides the development of policies and instrumental in assessing the effectiveness

Public health surveillance at NCCID

- Antimicrobial resistance (AMR) and antimicrobial use (AMU) surveillance, including One Health approaches
- Tuberculosis surveillance
- Swine-influenza surveillance
- Emerging infectious diseases surveillance
- Equity
- HIV surveillance
- Big data
- The impact of flight connectivity on COVID-19 evolution

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NCCID recent review and consultations

Difficulties generated by the federated systems

- Heterogeneity (data collected, case definitions, etc.)
- Lack of interoperability between the different systems
- Inequities in coverage and scope of surveillance between jurisdictions

“It's broken and it's fractured.”

NCCID recent review of gaps and weaknesses

Lack of timeliness

Lack of resources (financial, human and technological)

"The data and information technology is, I think, one of the most underinvested areas in public health.“

Lack of granularity and data disaggregation at the national level

"We have decreasing number of data points and the data is becoming less and less granular [...] we're now in a very rudimentary reporting system that gives really no useful information for public health, and it's actually atrocious."

NCCID recent review of gaps and weaknesses

Equity

- The lack of granularity and data disaggregation does not allow us to expose inequities.

> *“There is a risk of further entrenching inequities in health if not looking at particular and careful attention to disadvantaged populations, and disaggregating that data.”*

NCCID recent review of gaps and weaknesses

Stigmatization

> *“[It is harmful] when certain risk behaviors are flagged with a moralistic tone, entailing judgment on and singling communities out.”*

Confidentiality and data protection

Lessons learned: COVID-19 surveillance in Canada

- **Timeliness** of surveillance systems is inadequate
- Data shared by P/T with the national level should be **harmonized**
- **Lack of interoperability** of data systems is a major challenge
- **Investment in technological infrastructure** for public health surveillance is highly insufficient
- Investment in data systems compared to testing technologies is lagging – part of the lack of an overall health information strategy

Lessons learned: COVID-19 surveillance in Canada

- Public health **financing** is insufficient, and it impacts surveillance
- Public health surveillance does not focus enough on **One Health**
- Surveillance systems fails to capture **socioeconomic factors** and doesn't allow enough **disaggregation**
- Public health should address and adjust to the **infodemic**
- **Coverage is not equitable**

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Changing landscape

The context for surveillance has changed rapidly over the past 2 decades, including:

- New diseases and health threats
- Changes in data governance norms
- The emergence of new data sources and publicly available sources
- Development of data mining and analytical technologies

Changing landscape: Opportunities

Can we use climate change as an example and model for surveillance?

- Emerging infectious diseases are an example
- Expansion in range driven by environmental changes
- New interactions between wildlife, domestic animals and humans
- Species range changes; human mobility - clearly illustrated in pherozoonoses such as dengue, leishmaniasis, tick borne encephalitis and West Nile virus

Opportunities: Between epidemics

- Indicators of historical burden
- Warning surveillance systems
- Methods to evaluate interventions and mitigation strategies
- Novel data sources such as citizen science – e.g., *Aedes japonicus* in Spain with Mosquito alert app

Opportunities: Between epidemics

- Examples such as climate change demonstrate need to develop surveillance systems that are functional and collect information that will serve during the next pandemic
- Rather than focusing on specific pathogen

- Hazard
- Exposure
- Vulnerability
- **Equity**

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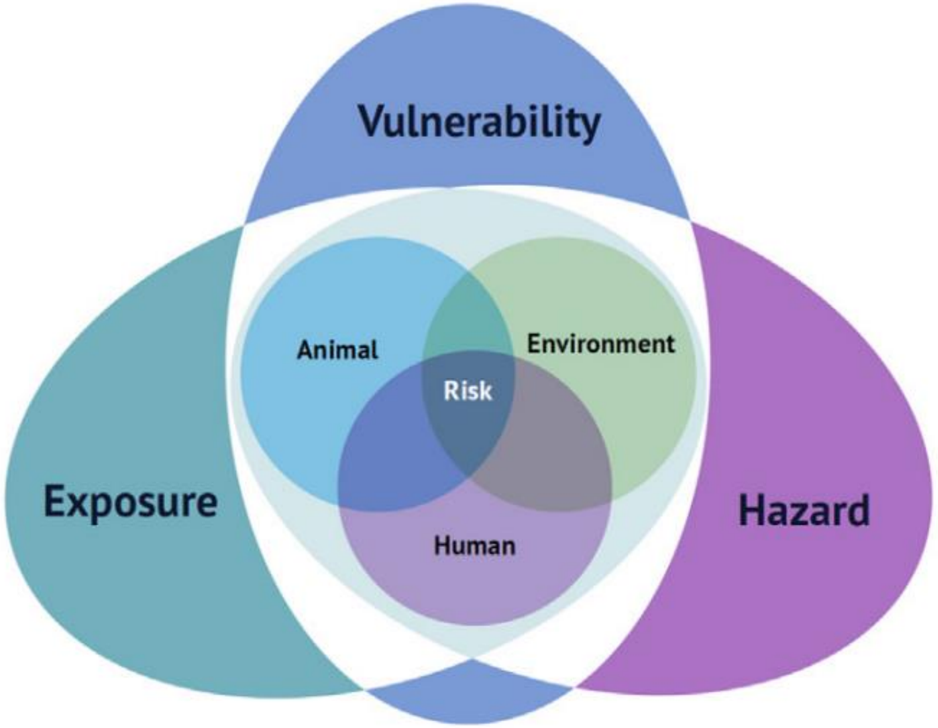
Opportunities: Between epidemics

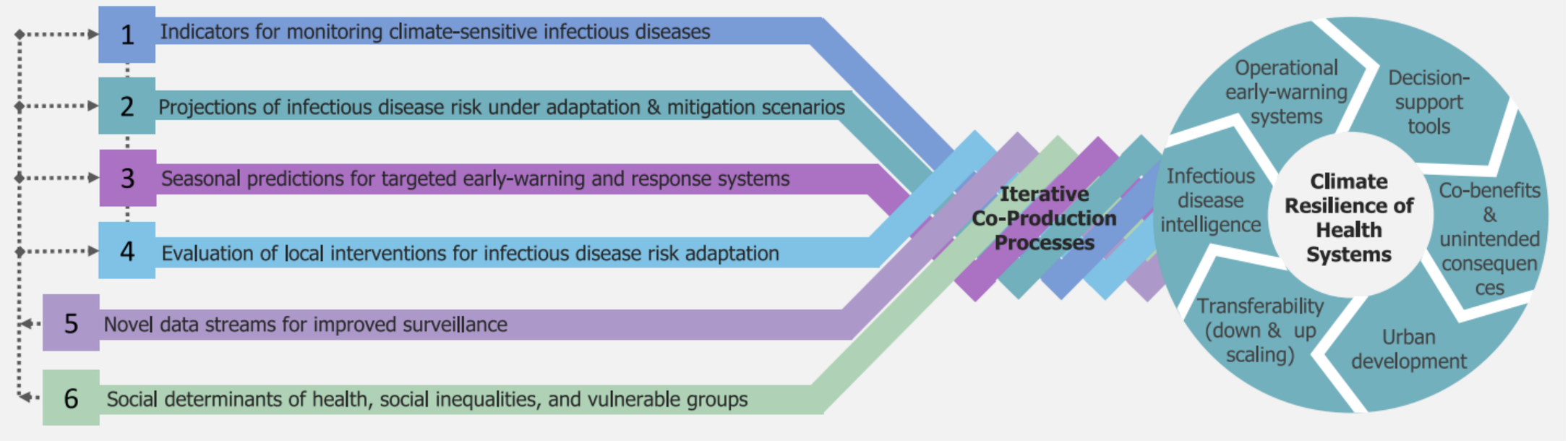
- Climate change is resulting in population displacement, from other countries and within Canada
- Exposing individuals to changing hazards of waterborne, respiratory, vector borne and sexually transmitted pathogens
- Alters access to preventive medicine (such as vaccines) and harm reduction
- Results in poor mental health and health outcomes
- The hazards disproportionately affect people who are poor, more rural, and precariously housed and are not assessed by systems designed to identify pathogens

Developing a system that is beyond disease surveillance



Rocklöv J et al. IDAlert Europe. Lancet Reg Health Eur. 2023 Aug 7

Developing a system that is beyond disease surveillance



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Summary

- Surveillance systems currently don’t collect the same information and platforms do not communicate across jurisdictions
- Systems measure specific conditions
- Investment is information/data systems is insufficient
- Coverage is not equitable
- Measures of vulnerability or equity – systems must measure the social determinants of health (SDoH)

Summary

- Opportunities to harness data that exist outside of healthcare and public health
- Citizen science and mining of publicly available data may have good return on investment
- Climate change can be an example of exercise for development of surveillance systems with equity and determinants of health in mind, rather than focus on technologies to detect pathogens and disease

A Vision for Public Health Surveillance in Canada in 2030

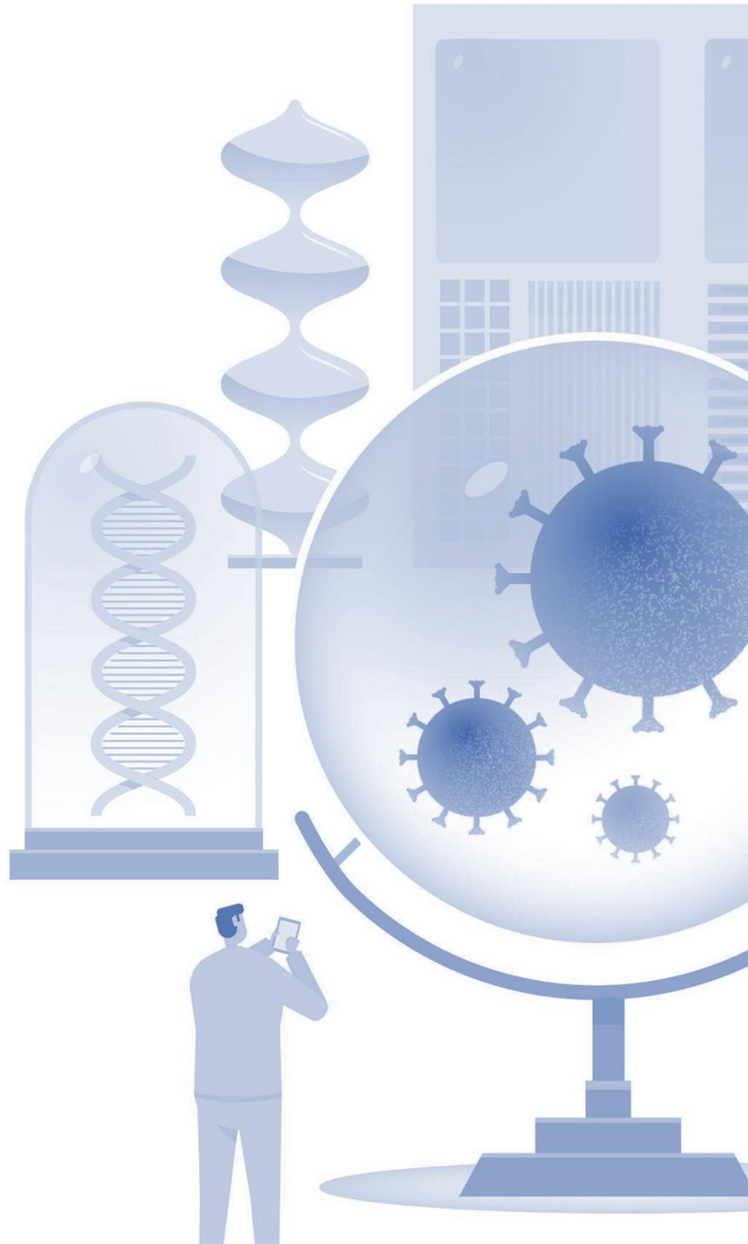
Dr. David Buckeridge
Executive Scientific Director, Corporate Surveillance and Data Branch, Public Health Agency of Canada

Public health surveillance at PHAC

PHAC provides national leadership for public health surveillance and coordinates with the provinces and territories to **detect, understand, and act in response to public health threats**.

We operate over **60 distinct surveillance systems**, and have made significant advancements and innovations before, during, and after the COVID-19 pandemic.

PHAC is building the **foundations for an ambitious future-state** for public health surveillance.



Recent transformation of public health surveillance

Rapid pace of **innovation, evolution in technology, and increase in public awareness** has changed the nature of public health surveillance:

- Public expectations for transparency and access to information
- Increased demand for data from scientists, clinicians, policymakers, and the media
- Recognition of the importance of health equity and disaggregation of data
- Abundance of health information, data technologies, and infrastructure
- Advanced data analytics, big data, mathematical modelling and simulations, and artificial intelligence
- Data sharing and linkage across systems, sectors, political jurisdictions, and beyond healthcare

Future trends for public health surveillance

Digital transformation

Empowering public health surveillance to be more timely, accurate, collaborative, and comprehensive in addressing public health challenges

Global health surveillance

Strengthening health security and public health systems to adapt to the rapidly changing and complex landscape of health in Canada and across the world

New sources of data

Deriving public health insights using new and unconventional sources of information and integrating them with more traditional evidence

New tools

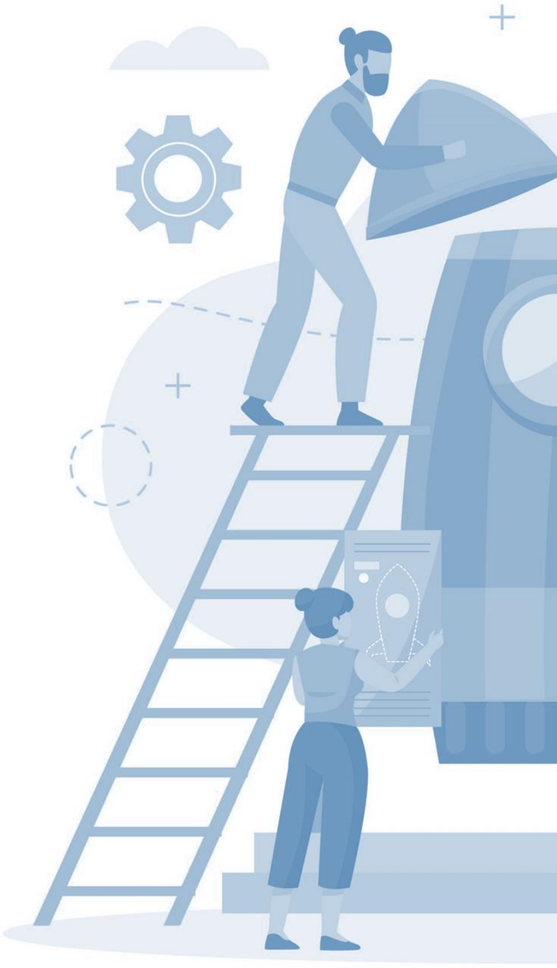
Leveraging new surveillance methods, tools, and networks that provide evidence to inform decision-making on public health policies and programs

Where are we headed?

We are **building on recent successes, relationships fostered, and lessons learned in public health surveillance** during the COVID-19 pandemic to protect and promote the health of people in Canada in the long-term.

The future of public health surveillance relies on the **best available evidence, expertise, and approaches**. Examples include:

- Democratization of surveillance communication and meaningful engagement
- Health equity as an integral component, not just a consideration
- Broader horizons on health threats beyond infectious diseases, with a One Health lens
- Leadership on data governance and stewardship, integrated surveillance systems, and global health surveillance
- Novel surveillance data sources, methods, and technologies



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A vision for public health surveillance in Canada

The Public Health Agency of Canada is developing a **vision about what public health surveillance in Canada can look like in the future** that will be informed by public health partners and stakeholders, and the public.

Having a vision will:

- ensure that **surveillance systems remain relevant and responsive to future public health needs**, and
- align efforts across the public health surveillance ecosystem **toward common objectives**.

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What will this vision contribute?

The vision will:

- Describe the characteristics of a **high-performing, responsive public health surveillance ecosystem**
- Demonstrate how the ecosystem should provide **insights to drive public health action**
- Be **based on science, evidence, input from communities, and real-world examples**
- Articulate a possible future-state for all stakeholders in the ecosystem to enable **collective and coordinated action**

How you can get involved

An **online consultation questionnaire and discussion guide will launch in October for two months** on the “Consulting with Canadians” webpage to get input on the future of public health surveillance in Canada.

Over the course of this initiative, we will be engaging with public health partners and stakeholders from coast to coast to coast in different venues. We would love to hear from you!

Your feedback is critical to informing where public health surveillance is headed.

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Discussion Period

Any questions?

Closing Remarks

Thank You!

Join us on Tuesday, October 31, 2023 (1:00-2:00pm ET) for the next seminar!

Please complete our **survey** that will be shared shortly after the seminar. Scan the QR code.

Seminar recording and presentation slides will be posted on https://nccid.ca/ within two weeks.

Visit https://nccid.ca/surveillance-advances-seminar-series/ for more information about the Surveillance Advances seminar series.