

**Surveillance Advances**  
**Progrès dans le domaine de la surveillance**

# Advancing the role of death investigations in surveillance

# Faire progresser le rôle des enquêtes sur les décès pour la surveillance

April 30, 2024

12:00 – 1:00pm CT / 1:00 – 2:00pm ET

## Speakers

Derek Scholten  
Emily Schleihauf

Public Health Agency of Canada (PHAC)

Dr. Christopher Murray

Institute of Health Metrics and Evaluation (IHME),  
University of Washington



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](mailto: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



# 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.

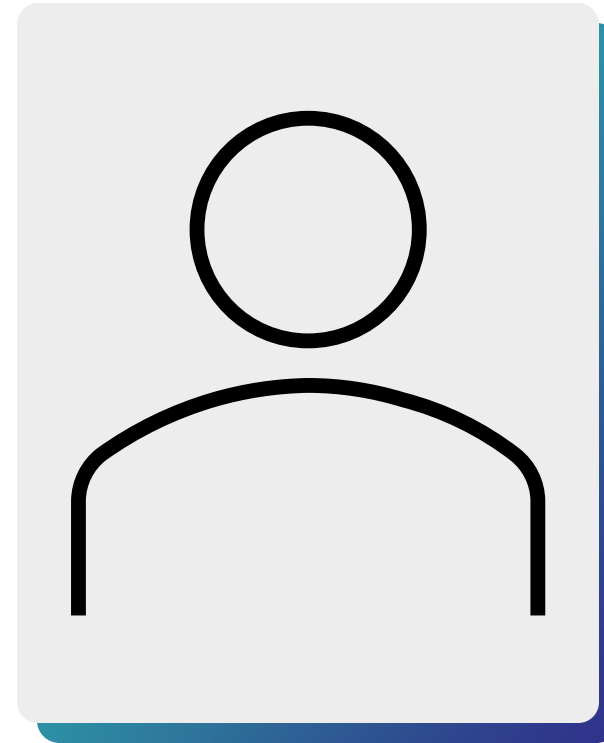
# Today's speakers



**Derek Scholten**

MSc, Epidemiology and  
Statistics

Senior Epidemiologist  
Public Health Agency of  
Canada (PHAC)



**Emily Schleihauf**

M. Epidemiology

Public Health Officer and  
Senior Epidemiologist  
PHAC



**Dr. Christopher JL Murray**

MD, DPhil

Director | Professor, Chair of Health  
Metrics  
Institute of Health Metrics and  
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# Death Investigation Data for Public Health Surveillance and Research

## Derek Scholten

Master of Science in Epidemiology and Biostatistics  
Senior Epidemiologist  
Public Health Agency of Canada

## Emily Schleihauf

Master of Epidemiology  
Public Health Officer – Senior Epidemiologist  
Public Health Agency of Canada



# Conflicts of interest

We have no conflicts of interest to declare





# Learning Objectives

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- Learn about death investigation in Canada and how data from death investigation findings are collected at the national level.
- Understand the origins and focus areas of the Chief Coroners, Chief Medical Examiners, and Public Health Collaborative.
- Learn how death investigation findings can be used for surveillance activities that can inform strategies to reduce preventable deaths.

# Background

- Approximately 15% to 20% of all deaths are investigated by coroners and medical examiners
  - In Canada, medicolegal death investigation and its corresponding legislation are the jurisdictional responsibility of the provinces and territories (PT)
  - PTs have either coroner-based (YT, NT, NU, BC, SK, ON, QC, NB, PE) or medical examiner-based (AB, MB, NS, NL) systems
- Coroners and medical examiners investigate deaths that are unexpected, unexplained, or that occur by violence, for example:
  - Domestic homicides, suicides, substance-related toxicity deaths, fatal motor vehicle collisions, and infant, child, and maternal deaths
- Pan-Canadian public health surveillance seeks to use timely and comparable death investigation data to address evidence needs to inform prevention efforts.
- Death investigation data are collated nationally in the Canadian Coroner and Medical Examiner Database (CCMED) held by Statistics Canada (StatCan).

# What is the CCMED?

- **CCMED** was established in 2008 at StatCan in collaboration with the 13 PT CC/CMEs and PHAC
- Contains data on over **500,000 records from 12 jurisdictions from 2006 – 2023**
- Data files are submitted to StatCan from the CC/CME offices and include:
  - Demographic variables (PT, age, sex, dates of birth/death)
  - Manner of death
  - Causes of death (text-based)
  - Other health conditions
  - Circumstances of death
  - Place of death/event
  - Safety information
  - Narrative (text-based)
- Represents just a portion of what is collected as part of a death investigation

# System Challenges and Limitations

**Issue:** Challenges in the current system result in a lack of availability and timely access to comparable national mortality data on priority public health issues. This leads to an inability to consistently identify, evaluate, and monitor mortality trends at a national level, reducing the opportunity to inform intervention or prevention.

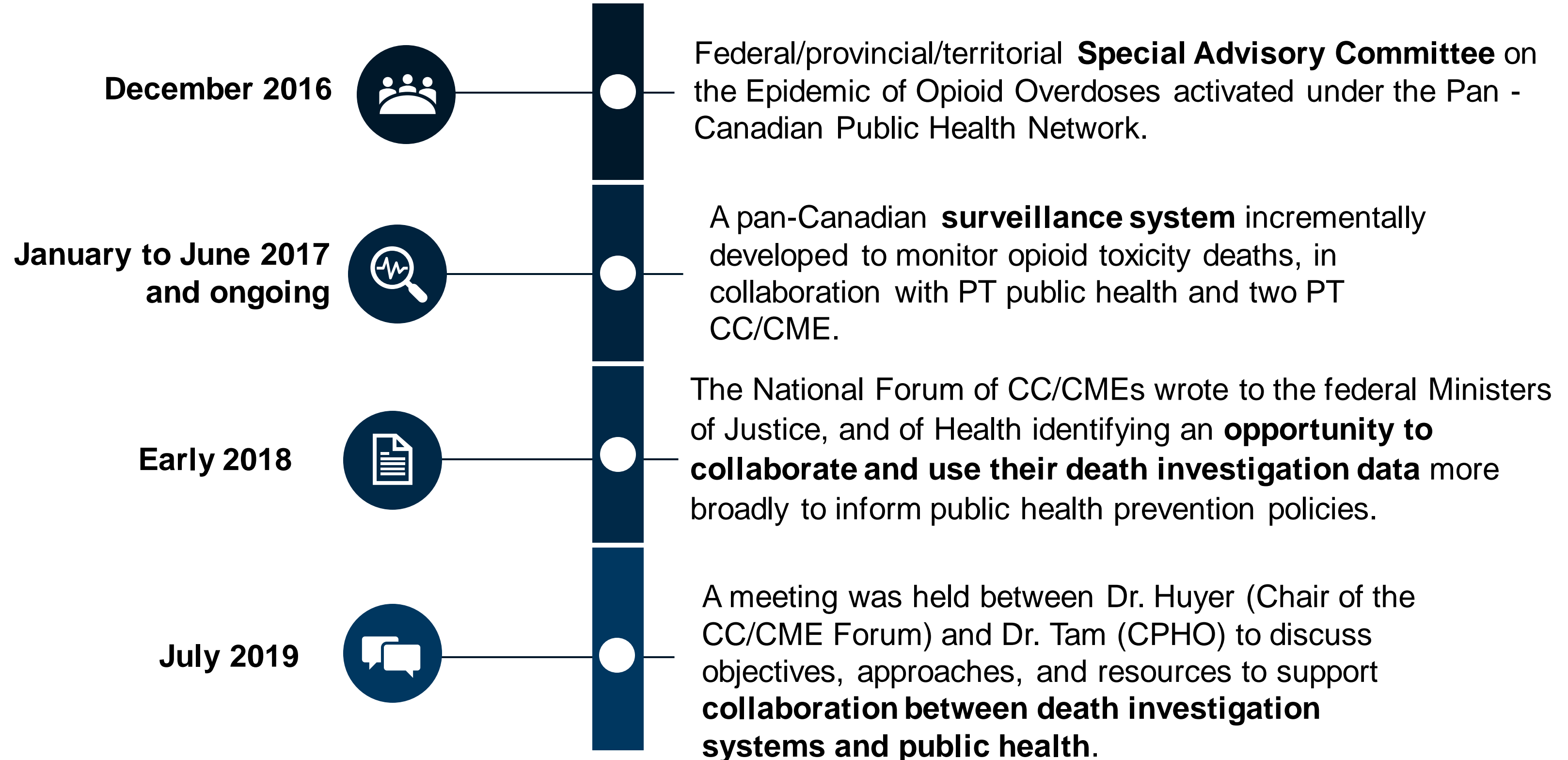
## Death Investigation System Challenges

- Varied approaches to death investigation and data collection across PTs
- Limited resources in CC/CME offices for data management and surveillance activities
- CC/CME case management systems
  - Some paper-based processes, variety of systems across PTs, some not amenable to change

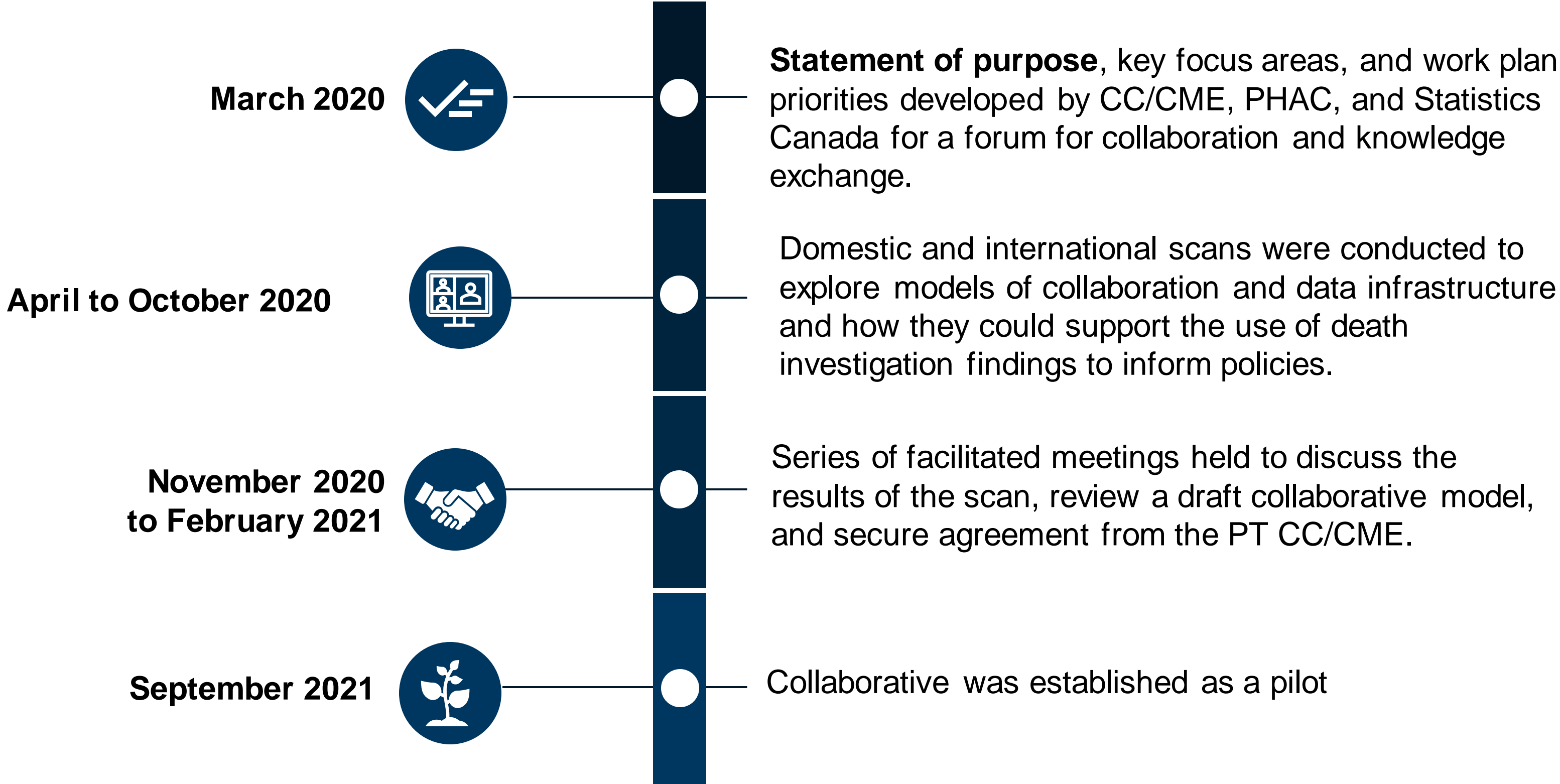
## CCMED Limitations

- Lack of data comparability and completeness across PTs
- Lack of pan-Canadian coverage (no data sharing agreement with Manitoba)
- Limited timeliness (some PTs only submit deaths after investigations are closed)
- Delayed access (PHAC can only access released data files at this time)
- Not easily analyzed
  - Cause and circumstance information mostly text-based, lacking discrete data element to capture key circumstance information

# Origins of the CC/CME-PH Collaborative – Key Events



# Origins of the CC/CME-PH Collaborative – Key Events (Continued)



# CC/CME-PH Collaborative

The CC/CME-PH Collaborative is a collaboration among provincial and territorial **CC/CMEs**, **PHAC** (technical secretariat), and **StatCan** (CCMED).

**Vision:** The CC/CME-PH Collaborative supports a vision where Canada has timely information from death investigations that can be used to identify trends, inform policy and prevention measures, and respond to emerging threats, all in the interests of reducing preventable deaths.

The CC/CME-PH Collaborative is working towards:

- More cohesive death reporting systems across the country and improved collection and reporting of timely and comparable data.
- A centralized national database with common data element sets on priority causes of preventable death to enable timely access by PTs, Government of Canada departments, researchers and media.
- Death prevention policies and measures have a strong evidence base, and create a more meaningful impact, with benefits across sectors, including justice, public safety and health.

# Collaborating Office for Medical Examiners and Coroners, US CDC

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- Similarly, in 2022 the US Centre for Disease Control and Prevention (CDC) developed the Collaborating Office for Medical Examiners and Coroners (COMEC) to bring together resources from across the CDC to help foster quality, consistency and coordination among public health surveillance efforts and the Medical Death Investigation communities

Collaborating Office for Medical Examiners and Coroners (COMEC)

<https://www.cdc.gov/nchs/comec/index.htm>



# Current Status and Key Functions

Through Budget 2022, PHAC received three years of funding to move beyond the pilot stage of the Collaborative to a phased implementation including:

**Establishing a technical secretariat** within PHAC that provides **technical support** to facilitate development of common approaches and minimum data element sets

**Supporting the augmentation of CCMED** to receive data elements and improve timely access to data for public health

**Improving capacity in CC/CME offices** including the placement of PHAC Public Health Officers

# Public Health Death Investigation Public Health Officer Stream Background

- Federal Budget 2022 funding also included a capacity building component for CC/CME offices - the placement of six Public Health Officers (PHO).
- PHOs provide epidemiology/analytical/data management capacity to their host CC/CME placement office and support joint federal/provincial/territorial (FPT) priorities established under the Collaborative (e.g. subgroup participation).
- This new stream of PHOs, referred to as the Public Health Death Investigation (PHDI) Stream, was launched in December of 2022 with funding to support placement until March 2025.
- The PHDI PHO stream is coordinated by
  - The Canadian Public Health Service a public health system capacity-building program that recruits, hires and places PHOs (largely epidemiologists and public health nurses) in host organizations across Canada in support of joint FPT public health priorities, and
  - The CC/CME-PH Collaborative secretariat, providing PHO's mentorship, technical support, coordination with Collaborative activities and knowledge exchange opportunities among PHOs.

# Current Priorities of the Collaborative

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The Collaborative has established several subgroups that are working to develop:

- **Data elements sets** and **common approaches** to death investigation that promote consistency and facilitate more comparable data to inform prevention strategies/policies

## **Current priorities:**

- Substance-related toxicity deaths
- Suicide deaths
- Exploring methods to capture information on:
  - Populations that are disproportionately affected due to existing health and social inequities (those with unstable housing, Indigenous populations, members of 2SLGBTQIA+ communities, and
  - Race and ethnicity



# Surveillance Activities Using Death Investigation Data



# Pan-Canadian Surveillance on Apparent Opioid and Stimulant Toxicity Deaths

# Federal/Provincial/Territorial Governance Context

- **December 2016** : Federal/provincial/territorial (FPT) Special Advisory Committee on the Epidemic of Opioid Overdoses (SAC) established within the Public Health Network Council (PHNC) structure
  - Time-limited mechanism to provide advice to the Conference of FPT Deputy Ministers of Health and act as a forum for public health collaboration
  - Included PT Chief Medical Officers of Health (CMOHs), Chief Public Health Officer (CPHO), and Assistant Deputy Ministers
- **January 2017**: Task group under SAC established: **Substance-related Mortality and Surveillance Task Group (SOMS-TG)**
  - Provides strategic, operational, and technical advice/recommendations regarding public health surveillance to monitor substance-related harms
  - Mandate includes implementing pan-Canadian data collection, collation, synthesis, and information-sharing

# Apparent Opioid and Stimulant Toxicity Death Surveillance

- The SOMS-TG collaborated with PT public health and Chief Coroners/Chief Medical Examiners to develop a surveillance system that was initiated in 2017

## Surveillance Objective

- To compile data from provincial/territorial Chief Coroners and Chief Medical Examiners on apparent opioid and stimulant toxicity deaths and their distribution by person, place, time, manner of death and the substances involved, and produce and disseminate descriptive summaries on a quarterly basis, in order to address the stated surveillance purposes:
  - Describe the distribution of substance-related acute toxicity deaths across Canada for priority substances
  - Monitor changes in occurrence and distribution of substance-related acute toxicity deaths
  - Facilitate federal, provincial/territorial, and local government and health systems action

# Evolution of Data Elements Included in Surveillance

2017

2024

Minimal opioid-related mortality data  
(overall numbers, age, sex distribution and fentanyl)

Additional details on substances involved  
(more specific categories)

Addition of origin of opioids  
(pharm vs. non-pharm)

Addition of stimulant toxicity data

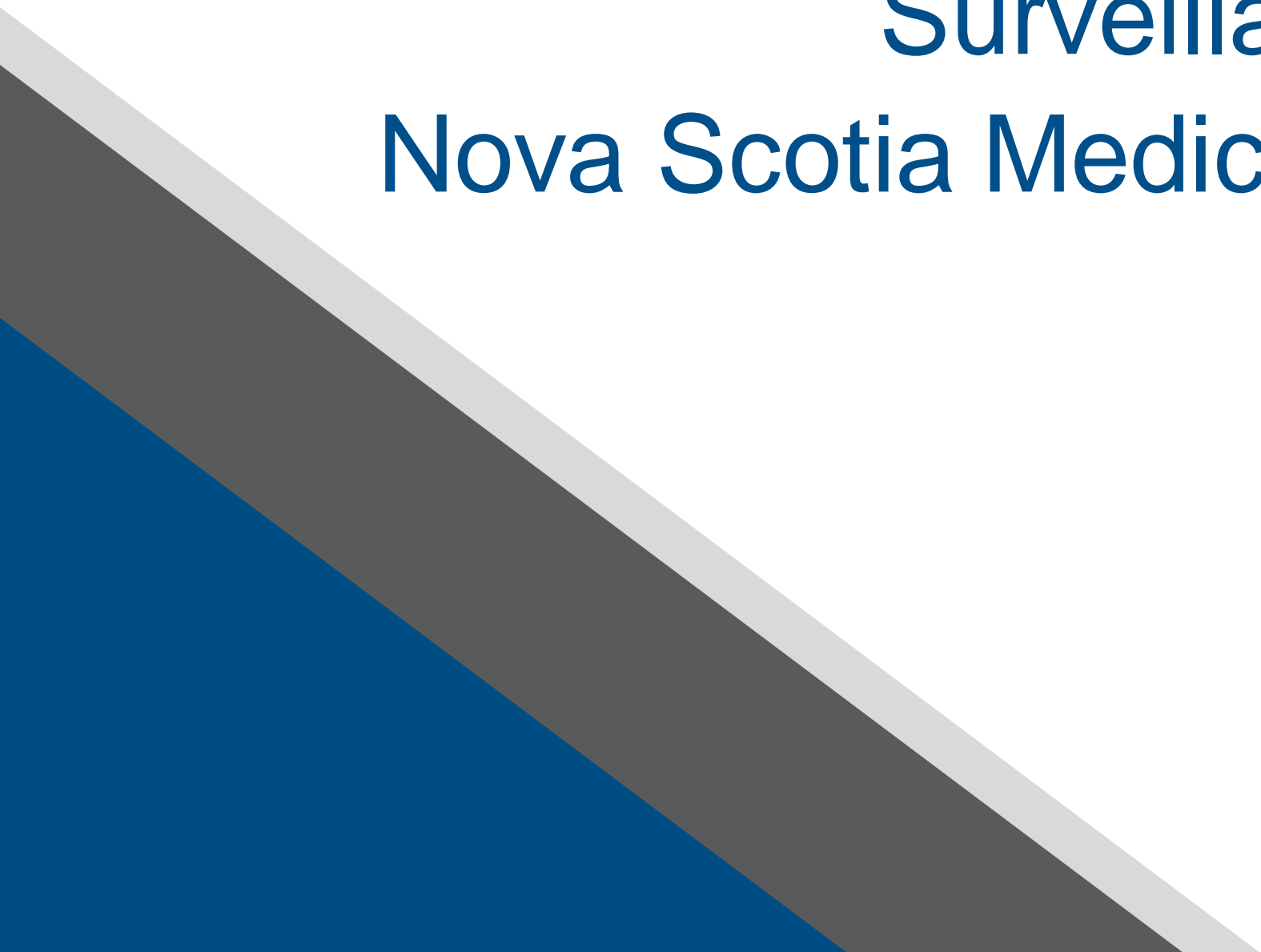
Addition of multivariate stratifications  
(age by sex, sex by type of opioids, etc.)

Note: National surveillance also includes Emergency Medical Services (EMS), Emergency Department and Hospitalization data sources



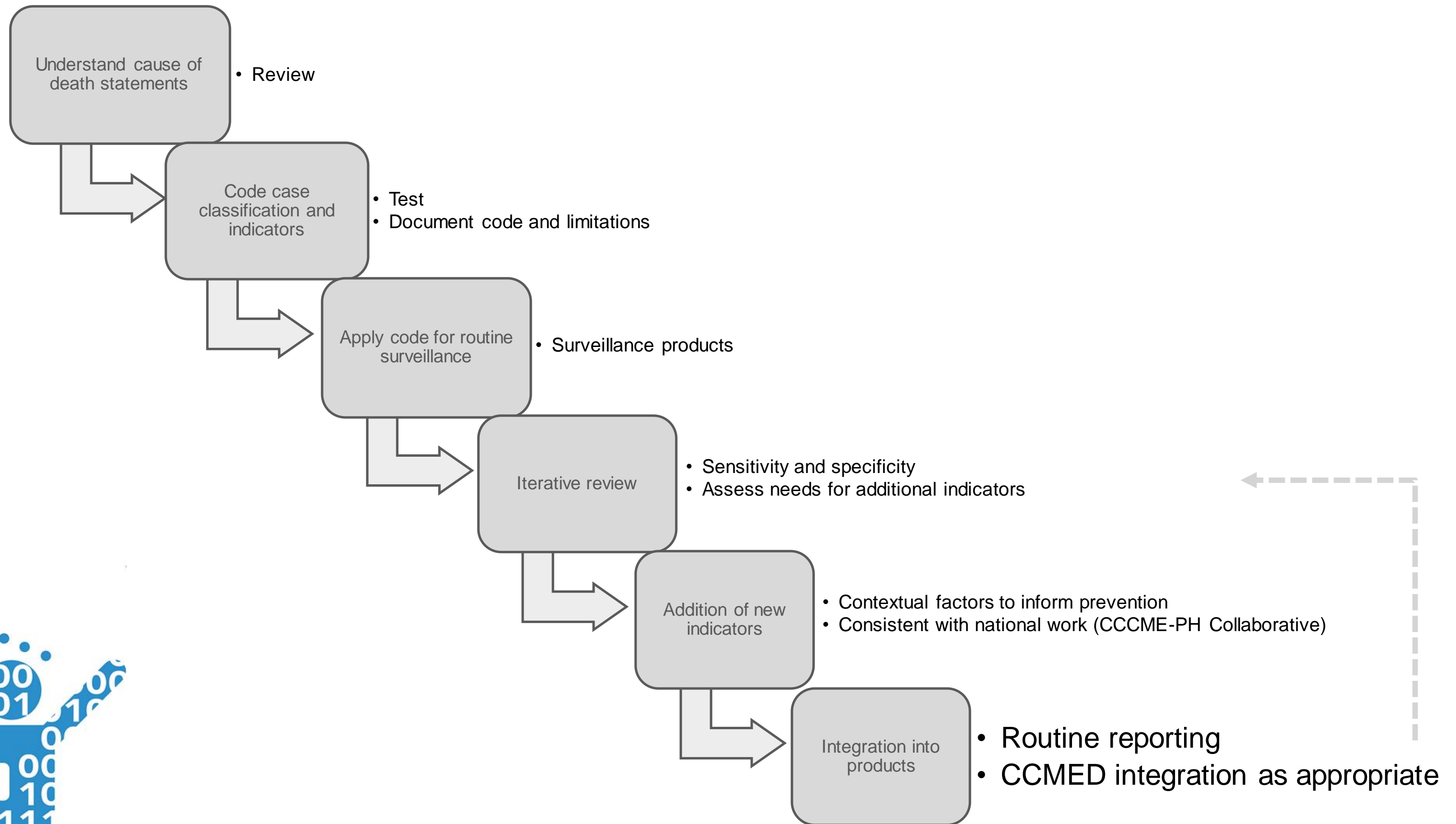
# Surveillance and Products – Opioid and Stimulant Toxicity Deaths

- Since June 2017, there have been **29** successful quarterly data releases, which are posted on Health Infobase.
- The resulting quarterly surveillance activities contribute to various deliverables that help inform and support policy and programs:
  - [Health Infobase](#): an online "data exploration tool". Public facing method to share results of surveillance
  - [Ministers' statement](#) and associated social media posts on X (formerly Twitter)
  - [Joint statement](#) by co-chairs of the F/P/T Special Advisory Committee on the Epidemic of Opioid Overdoses
  - Health Canada's webpage ([Federal actions on the overdose crisis](#))
  - [Modelling brief reports](#) prepared by PHAC's Substance Related Harms Division
  - Context for other departmental work, including Health Canada's Drug Analysis Service



# Surveillance Activities in the Nova Scotia Medical Examiner Service (NSMES)

# Systematic public health surveillance: evidence from the medical examiner to support prevention



# NS Examples: Outputs from the Medical Examiner Service

- Current publicly available surveillance information:
  - Data story on suicide mortality
    - » Trends over time and space, age group and sex, suicide methods, and dimensions of deprivation
  - Data tables and visualizations describing drug toxicity mortality
    - » Trends over time and space by drug type, age group and sex, living situation of decedent, whether others were present and/or aware decedent had used substances, place of toxicity event
- Upcoming reporting:
  - Trends in mortality in <25 year age group; all causes for cases investigated at NSMES
    - » Supporting the work of the Child Death Review Committee: annual report and recommendations
  - Trends in motor vehicle driver deaths by drugs detected
    - » Stakeholders in justice and public health

# Mortality surveillance supported by the NSMES

## 1. Timeliness

- » Testing for any association between suicide mortality and pandemic measures
- » Detection of any increase in toxicity deaths through monthly surveillance updates

## 2. Accuracy/specificity of causes/types of deaths

- » Ability to monitor methamphetamine deaths prior to addition to ICD (International Classification of Diseases)

## 3. Contextual information

- » Living situation of decedents who died due to drug toxicity
- » Associations between structural and social determinants of health and suicide, homicide
- » Activity at time of death and swimming ability reported in drowning deaths
- » Deaths directly related to climate and/or disaster events
- » Risk and protective factors associated with infant deaths where cause of death was undetermined

# Mortality surveillance supported by the NSMES

## Original quantitative research

### Suicide and drug toxicity mortality in the first year of the COVID-19 pandemic: use of medical examiner data for public health in Nova Scotia

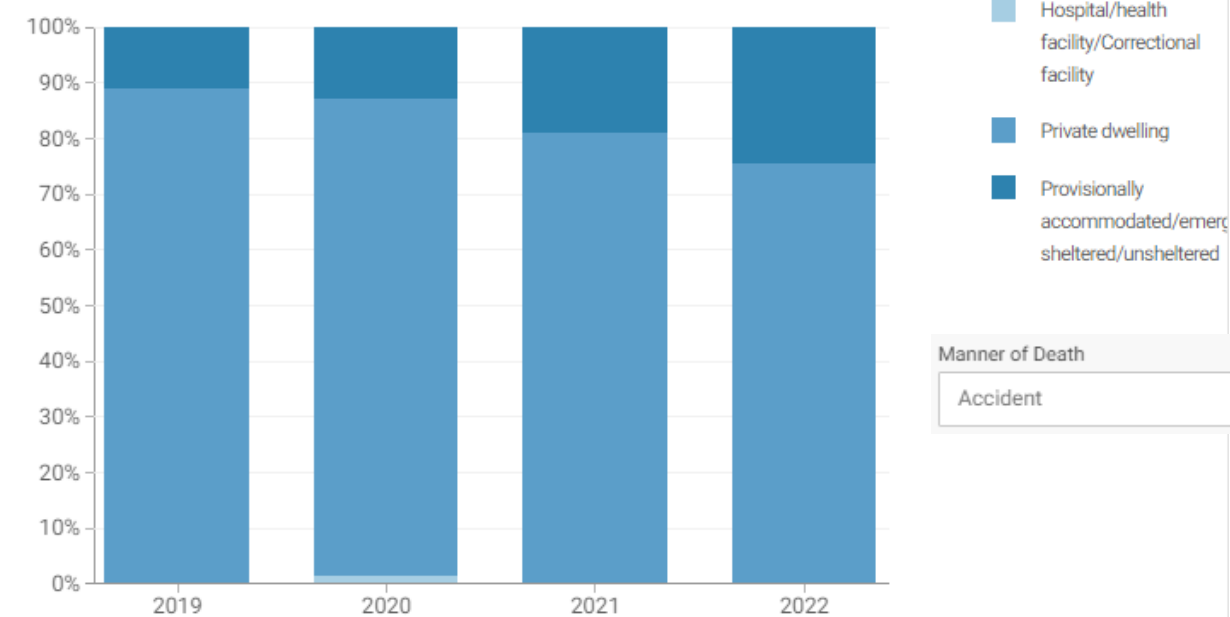
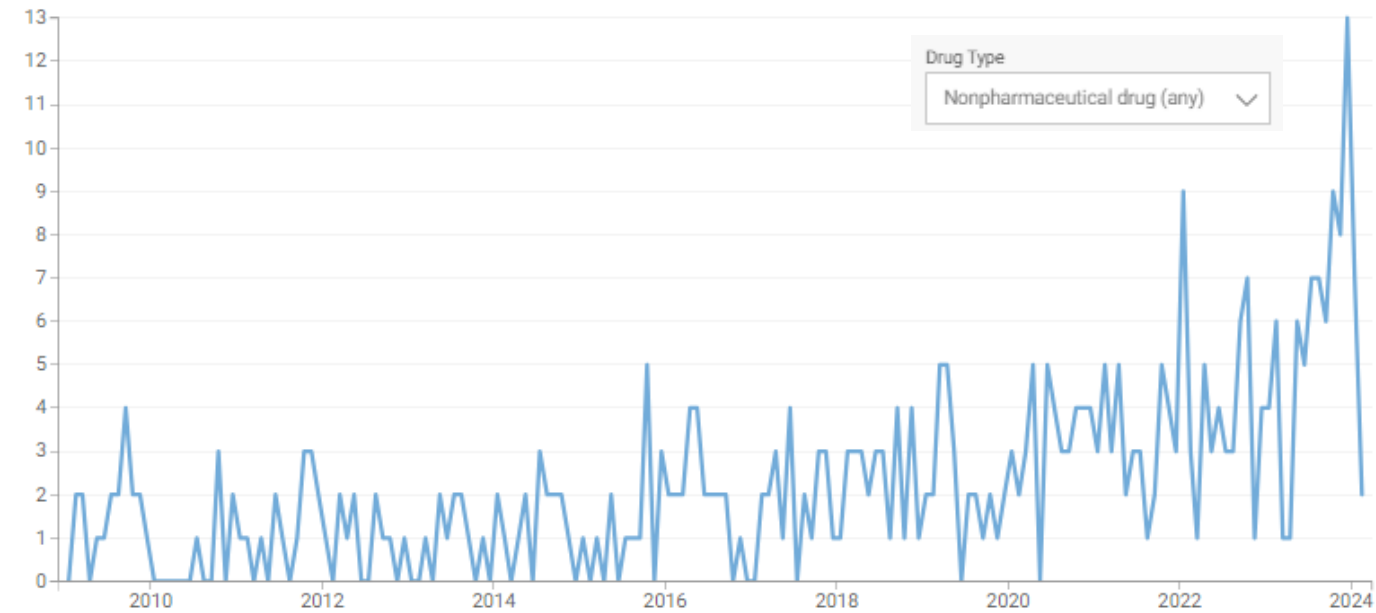
#### Highlights

- Unintended consequences of the COVID-19 pandemic and the resulting regulations and policies may include increased suicide and/or drug toxicity mortality.
- Suicide mortality decreased during the first year of the pandemic, a finding that was in agreement with international findings and was not related to reporting lags.

[Suicide and drug toxicity mortality in the first year of the COVID-19 pandemic: use of medical examiner data for public health in Nova Scotia - Canada.ca](#)

## Drug toxicity mortality: sample indicators

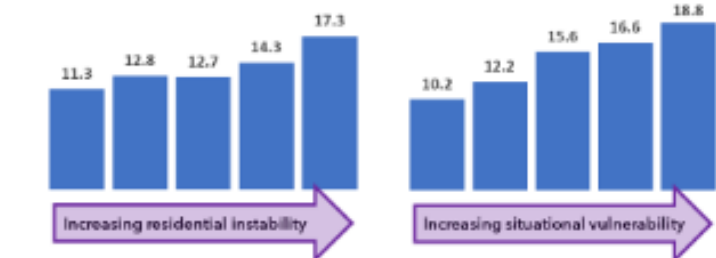
[Numbers and rates of substance-related fatalities in Nova Scotia | Open Data | Nova Scotia](#)



## Suicide rates across communities with different characteristics

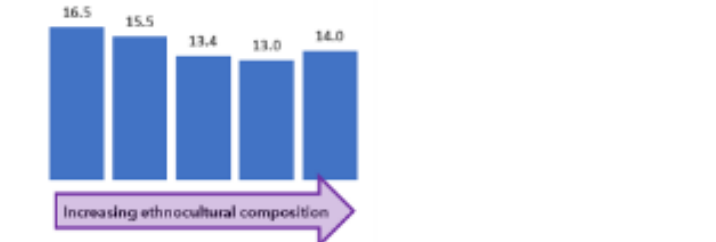
To look at differences in suicide rates across communities which have similar demographic and socioeconomic compositions, the [Canadian Index of Multiple Deprivation \(CIMD\)](#) can be used. The CIMD groups areas together based on similarities in dimensions of deprivation, including residential instability and situational vulnerability. Areas can be grouped into five levels (or quintiles) of residential instability and five levels (or quintiles) of situational vulnerability. More information about these composite measures based on census data is available through [Public Canada](#). For these two measures, based on 10 years of mortality data, there was an increasing trend in suicide rates from the most stable to least stable, for both the residential instability dimension, and from the least vulnerable to most vulnerable, for the situational vulnerability dimension.

Mean Annual Suicide Mortality Rate per 100,000 population, NS, 2012-2021, by CIMD quintiles



Another CIMD dimension looks at a measure named 'ethno-cultural composition'. This dimension did not show the same pattern in suicide rates as the previous two dimensions. For this dimension, increased ethno-cultural composition was not associated with the highest suicide rates. The communities which ranked lowest for ethno-cultural composition had the highest suicide rates.

Mean Annual Suicide Mortality Rate per 100,000 population, 2012-2021, NS, by CIMD quintiles



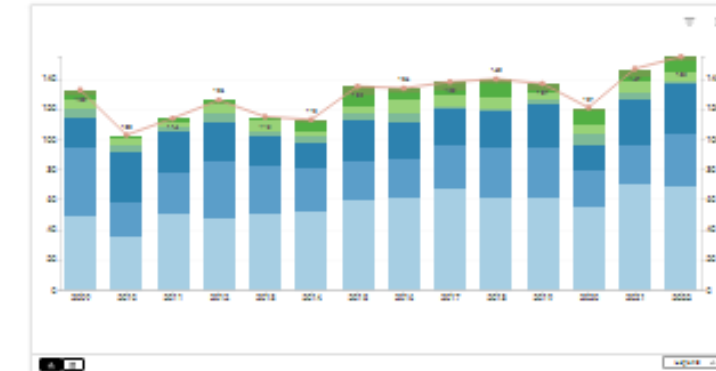
These composite measures can inform discussions on societal and community-level life promotion and suicide prevention activities. While these census-derived dimensions come from a lens of community deprivation, community strengths can be observed.

## Methods of suicide in our province and what it means for suicide prevention

One of the ways to prevent suicide is limiting access to lethal means for a person at risk of suicide. Involvement in means restriction. The Harvard School of Public Health found that limiting access to lethal weapons is especially important if the person is experiencing a short-term crisis. [\(https://www.hsph.harvard.edu/means-restriction/\)](#) Reducing access to lethal means such as guns and large volumes of medication is important when someone is feeling suicidal. Some lethal means are difficult to restrict because of their widespread availability.

In Nova Scotia, hanging is the most common method of suicide death, and this lethal means is not something that can be removed or restricted in most settings (an exception may be institutional settings). The graph below shows suicide deaths in Nova Scotia by suicide method by year.

### Annual Frequencies of Suicide Deaths by Suicide Method



It is important to recognize that means restriction is one small piece of a larger suicide prevention and risk reduction strategy. Considering more upstream measures that address the social and economic factors that can lead to or contribute to suicide risk together with concrete that support life promotion is an important part of Nova Scotia's Suicide Prevention and Risk Reduction Framework.

## Suicide is complex

The Nova Scotia mortality data tells us an important story of how suicide can vary across individual and community factors. Suicide prevention efforts should consider these factors. Suicide prevention efforts need to go beyond individual-level interventions. In addition to clinical treatments, suicide prevention and risk reduction includes prevention that happens at the community and societal levels. Prevention strategies can include increasing financial and housing stability, poverty reduction strategies, reducing stigma and discrimination, and increasing community belonging. Historical injustices, systemic discrimination and racism, and the impacts of intergenerational trauma need to be addressed.

In addition to considering how individuals can more easily access clinical interventions, using a public health approach allows us to focus on societal contexts and prevention strategies that impact communities. This approach will improve not only the health of individuals but also the health of populations. Life promotion is a broad term that includes factors that help people build resilience before a crisis happens. Taking a life promotion approach allows for focus on preventing suicide before people are in crisis and to understand and address a broad range of risk and protective factors.

While mortality data were the focus here, further information from several sources can contribute to understanding suicide prevention and life promotion. Sources may include health care utilization data, or visits to the health care system, and surveys of the population.



# Nova Scotia: Public reporting of mortality surveillance

- Multiple stakeholders benefit from the information shared
  - Public Health and health system partners
  - Office of Addictions and Mental Health
  - Justice and social services partners
  - Community-based organizations
  - Media
- Release of data and information through the NS Open Data platform
  - Includes data tables and visualizations
  - Proactive, transparent, accessible, supports research
  - Data release process follows guidelines to mitigate risks of individual, attribute, and community disclosure

# Key messages from today



- The CC/CME-PH Collaborative is an innovative, cross-sectoral initiative among federal, provincial and territorial partners working to improve the timeliness and comparability of death investigation data
- Findings from death investigation data are an important source of information for public health surveillance and research to inform public health strategies to reduce preventable deaths
- The timeliness, specificity and contextual information made available for public health surveillance will better inform prevention activities



# Thank you

Collaborative email:

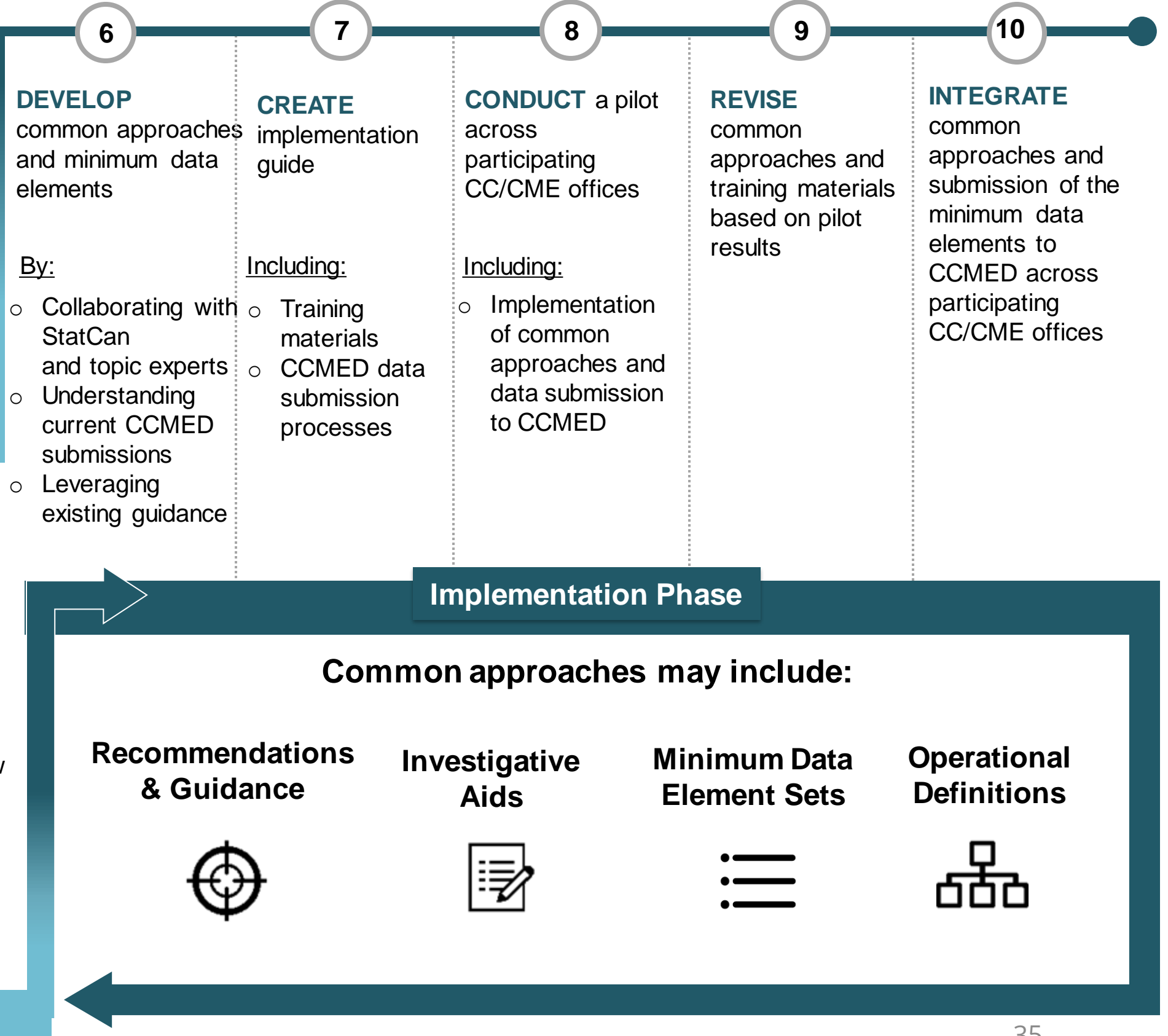
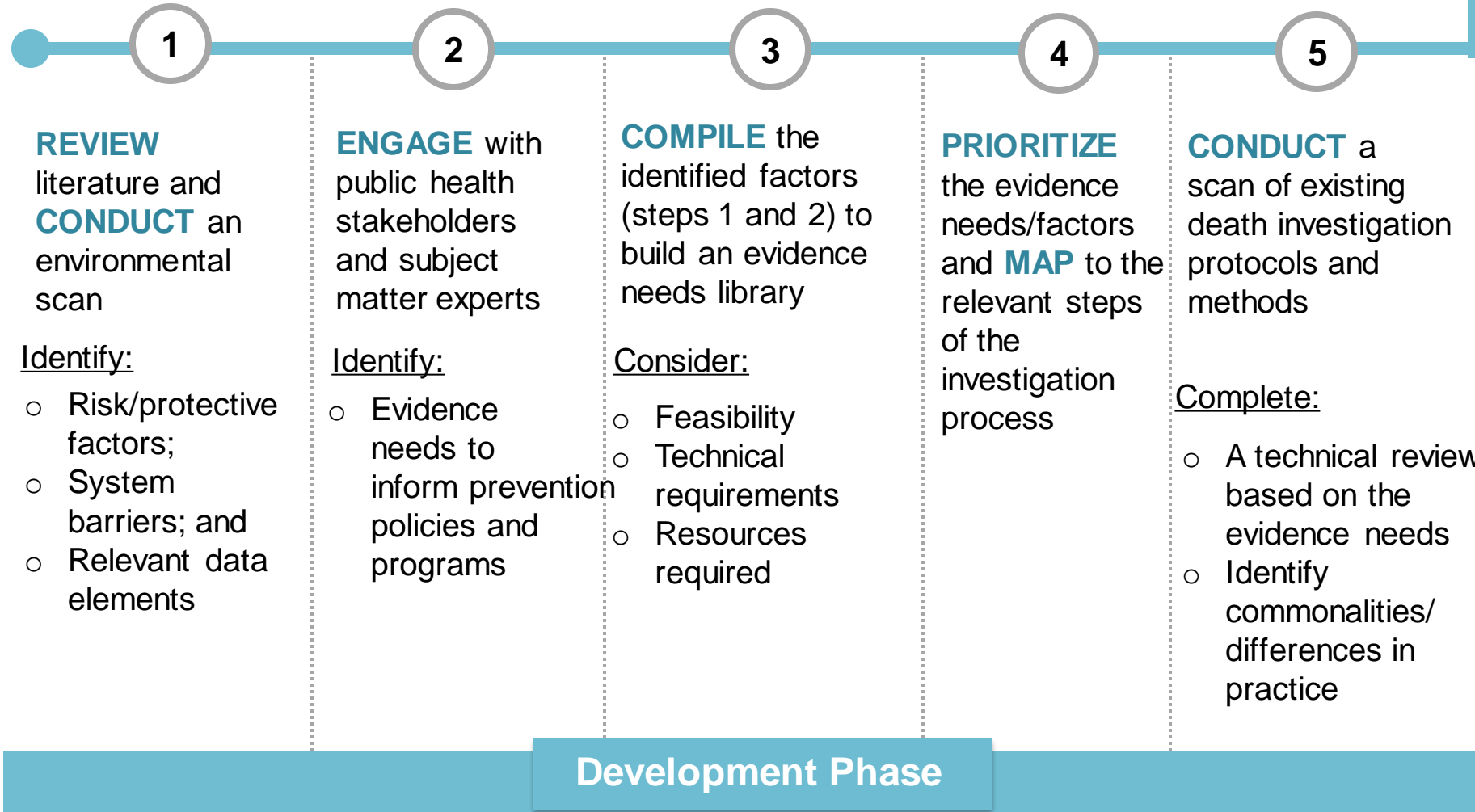
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# Appendix

# Common Approach Framework

## Common Approach Framework

The CAF details an iterative and step-by-step approach to guide the Collaborative with identifying evidence needs to develop common approaches that address the submission of timely and comparable death investigation data on priority causes of death.



- Identify:**
- Risk/protective factors;
  - System barriers; and
  - Relevant data elements
- Identify:**
- Evidence needs to inform prevention policies and programs
- Consider:**
- Feasibility
  - Technical requirements
  - Resources required
- Complete:**
- A technical review based on the evidence needs
  - Identify commonalities/differences in practice

- By:**
- Collaborating with StatCan and topic experts
  - Understanding current CCMED submissions
  - Leveraging existing guidance
- Including:**
- Training materials
  - CCMED data submission processes
- Including:**
- Implementation of common approaches and data submission to CCMED

## Discussion Period

### Any questions?

Please use the **Q&A tab** to submit your questions for our speaker. You can “**like**” other people’s questions to push them up in priority.



# Closing Remarks



# Thank You!

Join us on Tuesday, May 28, 2024 (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.

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