

Use of data from death investigation systems to support community health and prevent premature deaths in Canada

Matt Bowes MD, Robert Strang MD MHSc, Dirk Huyer MD

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Death is certain, but its timing and context are not. One of the most important missions of medicine and public health is to prevent premature deaths. Recent initiatives have shown that studying patterns of death and related factors can identify emerging causes of death at the community level, highlight important health inequities, and suggest interventions to prevent premature deaths. We discuss how thoughtful use of data collected by death investigation systems can be used by public health services to prevent premature deaths.

The BC Coroners Service was the first in Canada to raise awareness of the increase in deaths from drug toxicity, which tragically takes thousands of lives each year, prompting mobilization of a public health response.¹ At the national level, in early 2017, the Public Health Agency of Canada (PHAC), provincial and territorial public health systems, and coroner and medical examiner systems increased collaboration on surveillance of and research about deaths from drug toxicity.^{2,3} This ongoing monitoring of substance-related harms has drawn attention to the toxicity of the unregulated drug supply and informed prevention activities and policy decisions by governments and community services.²

Such collaborations have shown that detailed, timely, accurate, and consistent mortality data can inform prevention efforts. However, the challenge of monitoring the wider health effects of the COVID-19 pandemic and the unintended consequences of related public health measures showed that data are inadequate.⁴ Enhanced collaboration is needed between Canada's coroners and medical examiners (who have different titles but perform the same investigative function); provincial, territorial, and national vital statistic registrars; the Canadian Coroner and Medical Examiner Database (CCMED); and public health authorities to make better use of information collected during death investigations for prevention purposes.

Death certification is the main instrument used to document deaths, including the cause and manner of death. Deaths are certified by the last attending physician if the death is due to a natural disease. If the death is related to a nonnatural cause such as

Key points

- Mortality data that are detailed, accurate, comparable, accessible, and consistent are lacking in Canada.
- These data are necessary to inform efforts to prevent deaths from accidents and illness and can be advanced through enhanced collaboration between Canada's public health and death investigation systems.
- Such collaboration has proven valuable at the federal, provincial, and territorial levels in addressing street drug overdoses and the COVID-19 pandemic.
- Further strengthening such collaboration can contribute to action to reduce deaths from substance-related toxicity, deaths from suicide, deaths resulting from violence, and climate-related deaths.

injury, the cause is uncertain, or the circumstances are suspicious, the death is certified by a coroner or a medical examiner after their investigation. Approximately 15%–20% of all deaths are investigated by coroners or medical examiners,⁵ and these deaths are often among the most tragic. Coroners and medical examiners may be the first to see trends in nonnatural deaths, are an important component of public health surveillance,^{6–8} and can inform decision-makers about possible ways of preventing further deaths. Death investigation data can also provide important feedback to understand the impact of public health measures that have been introduced.

Provinces and territories have legislative responsibility for medicolegal death investigations. Therefore, each jurisdiction has developed its own approach to conducting death investigations, which is partly why Canada has both coroner and medical examiner systems and why no national standard for medicolegal death investigations exists.⁹ Moreover, variability in how acute drug toxicity deaths are defined and recorded confounds understanding of the emergence and ongoing distribution of deaths from regulated pharmaceutical and unregulated substances.

Public health epidemiologists placed in several provincial coroner and medical examiner offices by PHAC have brought a public health lens to death investigations since 2016. They support enhanced surveillance of priority public health concerns, build relationships across sectors to mobilize information, and support prevention and intervention initiatives.

In Nova Scotia, a collaboration between the Nova Scotia Medical Examiner Service, the Department of Health and Wellness, and provincial law enforcement agencies has integrated acute drug toxicity mortality data, police drug seizure data, and health system utilization data. Drug intoxication death data are reported monthly (<https://data.novascotia.ca/>). Public health epidemiologists placed in the Nova Scotia Medical Examiner Service lead this collaboration, along with the development of monthly suicide surveillance for the province,^{10,11} to ensure a reliable source of information to help interested parties understand the causes of these deaths and to suggest methods of prevention. This collaboration will soon provide the new provincial child death review committee aggregate data on causes of death of residents of the province who are younger than 25 years, which will hopefully facilitate the detection of emerging trends in child and youth mortality.

In Ontario, public health epidemiologists have helped coordinate a comprehensive, high-quality electronic substance mortality reporting system for the province. They have worked with diverse interested parties to mobilize information on substance-related deaths to support prevention and response activities. For example, community-specific information, like types of drugs and possible adulterants or clusters of overdoses, is shared in a regular manner to inform local community drug strategies, monitor trends, and help prioritize additional resources for communities with the highest death rates. The Office of the Chief Coroner's motto "We speak for the dead to protect the living" articulates a wider appreciation of the public health and safety role of the death investigation system, leading to the development of a new Death Analytics for Safety and Health Unit, which embeds public health epidemiologic expertise in the death investigation system (<https://www.ontario.ca/page/office-chief-coroner-and-ontario-forensic-pathology-service>). The unit collaborates in sharing, analyzing, and interpreting different types of mortality data (e.g., substance related, deaths associated with homelessness, and mortality characterized by race) with organizations with mandates for prevention, such as public health units, and at the community level to inform individual response (e.g., First Nations communities).

The Chief Coroners, Chief Medical Examiners, and Public Health Collaborative was launched in 2021 with a technical secretariat that brings together PHAC, provincial and territorial chief coroners and medical examiners, and Statistics Canada to support consistency in death investigation and address evidence gaps, reflecting growing collaboration between these sectors. Current areas of focus include developing common investigative approaches and data elements for substance-related toxicity deaths, suicide deaths, and information on populations that may be disproportionately affected by existing

health and social inequities. Provincial and territorial and CCMED data systems will be better standardized and integrated for more timely and comparable pan-Canadian death investigation data.

Similarly, in 2022 the US Centers for Disease Control and Prevention (CDC) developed the Collaborating Office for Medical Examiners and Coroners 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.¹²

The routine use of death investigation data beyond the substance use toxicity crisis can be strengthened to address the prevention of suicide, deaths resulting from domestic violence, and deaths related to extreme weather (e.g., heat-related deaths, and deaths from floods and wildfires) among other public health issues. Developing a comprehensive federal-provincial-territorial data system that includes public health and death investigation data, with links to other administrative data (e.g., census, health service use, and prescription monitoring programs), has unique value to inform public health actions to prevent deaths, address health inequities, and influence policy interventions. Continued and ongoing collaboration between Statistics Canada and federal, provincial, and territorial public health and death investigation systems is needed to reach this goal.

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Affiliations: Nova Scotia Department of Justice (Bowes); Nova Scotia Department of Health and Wellness (Strang), Halifax, NS; Office of the Chief Coroner of Ontario (Huyer), Toronto, Ont.

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Correspondence to: Robert Strang, robert.strang@novascotia.ca