



Pan-Canadian framework for action on antimicrobial resistance and antimicrobial use

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Abstract

Antimicrobial-resistant infections are becoming more frequent and increasingly difficult to treat, and this situation is exacerbated by the widespread use of antimicrobials in both human and veterinary medicine and by the agriculture industry. As part of Canada's coordinated response to addressing antimicrobial resistance (AMR), *Tackling Antimicrobial Resistance and Antimicrobial Use: A Pan-Canadian Framework for Action*, was released in September 2017. The Framework is a high-level policy document that outlines the strategic objectives, outcomes and opportunities to guide collaborative action on AMR and antimicrobial use (AMU). It is grounded in a One Health approach, and was developed in collaboration with federal, provincial and territorial governments and external stakeholders in the human and animal health sectors. The Framework is based on four components: surveillance; infection prevention and control; stewardship; and research and innovation. It builds upon existing AMR activities already underway in the human and animal health sectors and strives to connect these activities together to strengthen Canada's approach to AMR.

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Introduction

Antimicrobials are an essential tool against infections in both humans and animals. However, due to widespread use in human and veterinary medicine and in the agriculture industry, antimicrobials are losing their effectiveness more quickly than we are able to develop new ones. This has significant consequences for human and animal health and welfare, food safety, the environment and the economy. Canada must take coordinated action, both domestically and globally, to slow the rising trend of antimicrobial resistance (AMR) and minimize its impact while promoting appropriate antimicrobial use (AMU) to preserve the effectiveness of existing and future antimicrobials. The purpose of this article is to summarize the recently released document, *Tackling Antimicrobial Resistance and Antimicrobial Use: A Pan-Canadian Framework for Action* (1).

State of AMR and AMU in Canada

In Canada, rates of most AMR infections are stable and, in some cases, there has been a decline in the infection rates of select drug-resistant organisms; however, even these reduced rates exceed those of the early 2000s. Of concern, are the increased rates of some diseases; for example, *Neisseria gonorrhoea* has increased by 43.1% over the past decade in Canada and now requires stronger and more complex antibiotic treatment (2).

In community settings, antibiotics are often prescribed without laboratory testing and confirmation and are often used inappropriately to treat viral infections, for which they are ineffective (e.g., colds, flu, acute sinusitis). In 2014, it was

estimated that over 23 million antimicrobial prescriptions were written for human consumption in Canada and 93% were dispensed by community pharmacists (2). Of these, an estimated 30–50% were unnecessary (3).

Antimicrobials are also used in livestock for the treatment and control of disease and to improve production. The majority (73%) of antimicrobials distributed for use in animals belong to the same classes as those antimicrobials used in human medicine (2).

A Pan-Canadian approach to addressing AMR and AMU

Many AMR and AMU-related actions are underway in Canada; however, the endorsement of the Pan-Canadian Framework creates an opportunity to improve cross-sectoral coordination and collaboration through a coherent pan-Canadian response to AMR.

Federal, provincial and territorial (F/P/T) governments have employed a One Health approach in developing a Pan-Canadian Framework for Action, which recognizes the interconnectedness of humans, animals and the environment. The Framework was developed in collaboration with F/P/T governments and subject matter experts from academia, non-governmental organizations and industry representing human health, animal health and agriculture sectors. Its development was facilitated through a dedicated F/P/T governance structure, including senior governmental representatives and subject matter experts.



Pan-Canadian framework on antimicrobial resistance and antimicrobial use

The document *Tackling Antimicrobial Resistance and Antimicrobial Use: A Pan-Canadian Framework for Action* (1) was released in September 2017. Although all types of antimicrobials are critical for treating infections, the primary focus of the Framework is on bacterial resistance to antibiotics, as this is seen as the most significant threat to health.

The human and animal health aspects of the One Health approach are currently the focus of the Framework. As work advances in these areas, the environmental aspect will then be considered. The Framework focuses on four key components: surveillance; infection prevention and control; stewardship; and research and innovation. The overarching goal of the Framework is to strengthen Canada's ability to combat the risks of AMR in a coordinated, multi-sectoral and effective manner.

Surveillance

Strong, integrated surveillance systems are needed to provide a comprehensive picture of AMR and AMU in Canada. While pan-Canadian surveillance systems are producing useful and reliable data on AMR and AMU, there are still significant knowledge gaps in information for certain settings (e.g., community), the need for benchmarking to assess trends in AMR and AMU and an increased need for the standardization of laboratory and data collection methods, case definitions and improved timeliness of reporting.

Opportunities for action to address these gaps include coordination on robust and comprehensive surveillance systems, cross-sectoral data-sharing platforms and mechanisms and enhancement of coordinated technical guidance for data collection, collation and comparison.

Infection prevention and control (IPC)

To contain the spread of resistant organisms and reduce AMR and AMU, standardized infection prevention and control approaches, programs and policies must be in place. There are challenges to implementing IPC measures and practices in Canada within and across human and animal settings. These include few established IPC programs in long-term care facilities and other places where healthcare services are delivered, disparity in jurisdictional governance for IPC programs in the agriculture sector, and effective targeting and evaluation of IPC interventions.

Opportunities for action to address these challenges include multijurisdictional engagement of governments and stakeholders to take action within their realm of responsibility on delivering communication, education/training and tools on IPC practices and strategies and facilitating and promoting the application and oversight of IPC best practices.

Stewardship

Programs and policies that highlight education, awareness-raising and professional and regulatory oversight will

be required to reduce inappropriate prescribing, dispensing and use of antimicrobials in humans and animals, and to conserve the effectiveness of new and existing antimicrobials.

Improved knowledge translation, awareness, communication, regulatory consistency, training and guidance about AMR and AMU by and for health and veterinary professionals, livestock producers and the public, in combination with better coordination of F/P/T governments' efforts, are needed to foster an effective and sustained culture of antimicrobial stewardship. Sufficient investments in surveillance, research and evaluation and audit and feedback mechanisms are also required.

Opportunities for action to enhance AMR stewardship include a cross-sectoral, multi-disciplinary antimicrobial stewardship network, the implementation of a robust system for collecting AMU data, the development of governance tools such as regulations, organizational accreditation requirements and consistent standards, and enhanced education and public awareness.

Research and innovation

Responses to AMR must be evidence-based and will require increased knowledge, innovative tools and collaborative approaches to better understand resistance and the development of new treatments and strategies.

Notwithstanding Canada's considerable research efforts, the global community continues to lack new antimicrobials, diagnostic tools and alternative treatments to antimicrobials. Gaps in research also include the economic costs of AMR, AMR transmission and risks, prescribing practices, behaviours towards antimicrobials and IPC practices in healthcare and community settings.

Opportunities for action to address these gaps include a cross-sectoral, multidisciplinary research network; capacity building and improved infrastructure to support the development of human and veterinary medicines and alternative tools; and a fast-tracked cost-effective process for licensing treatments and new diagnostic tools in Canada.

Conclusion and next steps

Canada is currently taking significant steps to address AMR and AMU. The Framework affirms the commitment of F/P/T governments to take coordinated and comprehensive action to mitigate the risks of AMR and to protect the health of Canadians. An associated action plan will be developed that identifies concrete deliverables, measurable outcomes and timeframes to support the implementation of the Framework. Implementation of the Framework will require continued engagement and committed actions by governments, industry and stakeholders in each of the four components to enable a sustainable and effective pan-Canadian response to AMR and AMU.



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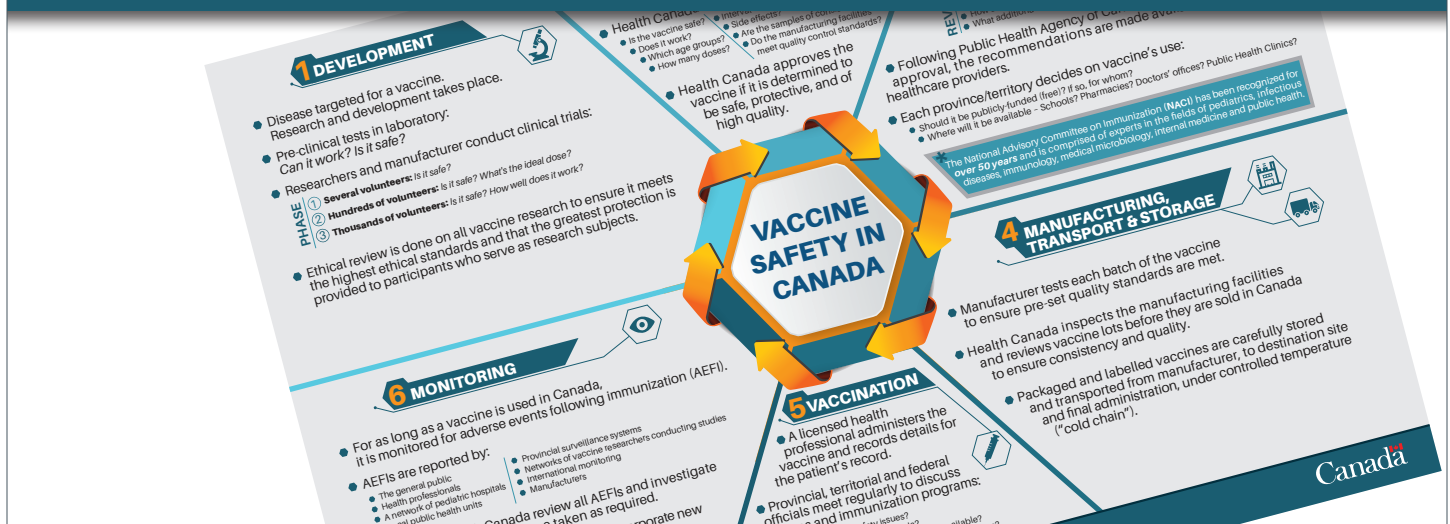
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