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Review Article

Pharmacist-Led Antimicrobial Stewardship Across Canada: Comparing Provincial Models for Hospitals With Limited Infectious Diseases Resources

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Abstract

Background: Antimicrobial stewardship programs (ASPs) are required within Canadian acute-care accreditation, yet implementation remains uneven, particularly in smaller hospitals and settings with limited on-site infectious diseases (ID) expertise. Because health care is organized provincially, Canada offers several stewardship models rather than a single national operating structure.

Objective: To examine pharmacist-led antimicrobial stewardship in Canada through a comparison of provincial approaches and identify transferable strategies for hospitals with limited specialist resources.

Methods: A narrative review was informed by the 2025 Canadian Nosocomial Infection Surveillance Program (CNISP) survey and current provincial stewardship resources from Ontario, Alberta, British Columbia, Saskatchewan, and Quebec.

Results: Among 106 CNISP hospitals surveyed in 2024, 84% reported a formal ASP; every hospital with an ASP included a pharmacist, 90% performed prospective audit and feedback, and 85% conducted quantitative antimicrobial-use surveillance. Most hospitals without a formal ASP were small sites.

Provincial approaches differ: Ontario emphasizes province-wide surveillance and benchmarking; Alberta is implementing an integrated provincial acute-care program; British Columbia coordinates health-authority stewardship through provincial expert networks; Saskatchewan uses a centralized provincial program supported by pharmacists, decision-support tools, and direct clinical review; and Quebec has a long-standing model of centrally developed antibiotic-use guidance. Across these systems, pharmacist leadership is most effective when linked to physician partnership, microbiology, data infrastructure, and access to ID consultation.

Conclusion: Canadian experience supports a hub-and-spoke model in which pharmacists provide local daily stewardship while provincial or regional systems supply specialist support, guidelines, surveillance, education, and escalation pathways. This structure is particularly relevant to smaller hospitals that cannot sustain full-time on-site ID services.

Keywords: antimicrobial stewardship; Canada; clinical pharmacist; infectious diseases; provincial health systems; prospective audit and feedback; antimicrobial resistance

1. Introduction

The original pharmacist-led stewardship model is particularly relevant to Canada because many rural, community, and smaller acute-care hospitals cannot maintain full-time on-site ID expertise. The challenge is not whether stewardship should exist, but how it should be organized when specialist resources are concentrated in larger centres.

Canada provides a useful natural comparison because stewardship is shaped by provincial health-system organization. Accreditation Canada has required antimicrobial stewardship in acute care since 2013, but the 2025 CNISP survey showed that implementation remains incomplete. Of 106 responding hospitals, 89 (84.0%) reported a formal ASP, while 17 did not; 15 of those 17 were small hospitals with fewer than 200 beds.[1]

This review therefore shifts the focus from a generic pharmacist-led model to the question of how different Canadian provinces organize stewardship, and what smaller hospitals can learn from those approaches.

2. National Canadian Benchmark: Pharmacists Are the Constant

The CNISP survey provides the clearest recent national snapshot. Among hospitals with an ASP, pharmacists were represented in 100% of programs, ID or infection-control specialist physicians in 90%, microbiologists in 76%, and infection-control professionals in 67%.[1] Ninety-three percent reported dedicated pharmacist time for

stewardship activities. Prospective audit and feedback was used by 90% of programs, 85% performed formal antimicrobial-use surveillance, and more than 80% provided prescriber education.[1]

However, only 21.3% of hospitals with an ASP met all seven assessed core elements. This is important: Canada has widespread stewardship infrastructure, but depth and maturity vary. The gap is greatest in smaller hospitals, reinforcing the need for regional and provincial support rather than expecting every site to replicate a tertiary-centre team.

3. Provincial Models: Different Routes to the Same Goal

Table 1. Selected Canadian provincial antimicrobial stewardship models

Province	System model	Current strengths	Relevance to smaller hospitals
Ontario	Provincial public-health data and benchmarking	PHO AMR-AMS Data Tool integrates resistance, antimicrobial use, and hospital ASP structure; provincial stewardship strategies and hospital landscape data are updated centrally.	Provides standardized benchmarking and ready-to-use tools without requiring each hospital to build its own analytics platform.
Alberta	Integrated provincial acute-care program	AHS launched an integrated provincial ASP in 2024 with phased implementation, provincial governance, local PAF, measurement, guidelines, and education.	Regional specialist and pharmacist expertise can support multiple acute-care sites through one provincial structure.
British Columbia	Health-authority network with provincial coordination	BCCDC supports community stewardship, while the Provincial Antimicrobial Clinical Expert group links health-authority ASPs, the Ministry of Health, and infection-control partners.	Allows local programs to retain operational flexibility while sharing provincial expertise and standards.
Saskatchewan	Centralized provincial ASP with point-of-care tools	SHA uses dedicated ASP pharmacists, ID physician support, the Firstline guideline platform, provincial policy work, and direct clinical review.	Demonstrates a hub-and-spoke model where a small expert team can influence care across a geographically large province.
Quebec	Central guidance and prescribing optimization	INESSS has a long history of province-wide antibiotic-use guidance for physicians and pharmacists, including syndrome-specific treatment recommendations.	Shows how centralized guideline development can reduce duplication and support consistent prescribing across institutions.

4. Ontario: Surveillance and Benchmarking as Stewardship Infrastructure

Ontario's model is distinguished by provincial surveillance and benchmarking through Public Health Ontario (PHO). The refreshed 2026 AMR-AMS Data Tool brings together province-wide antimicrobial resistance, antimicrobial use, and hospital ASP data, including results from the 2026 Ontario hospital stewardship landscape survey.[2] PHO also publishes standardized stewardship strategies covering antibiograms, prescribing guidance, and other implementation tools.

For a small hospital, the practical advantage is that core analytic and implementation resources are available provincially. Local pharmacists can focus on reviewing therapy, communicating with prescribers, and implementing interventions rather than independently building every surveillance method or stewardship toolkit.

5. Alberta: A Provincial Program With Local Pharmacist Delivery

Alberta Health Services (AHS) announced an integrated provincial ASP in May 2024, with phased implementation across acute-care sites.[3] The model combines provincial measurement, education, policies, and quality-improvement infrastructure with site-level pharmacist and physician activity.

Early operational data demonstrate the clinical intensity of this approach. At the Royal Alexandra Hospital, 512 audits generated 471 recommendations between July and December 2024. At the University of Alberta Hospital, 1,734 restricted-antimicrobial prescriptions were reviewed during the 2024/25 fiscal year; recommendations were made in 40.7% and 90.8% were accepted. At Red Deer Regional Hospital, 410 charts generated 292 recommendations with a 92% acceptance rate.[3]

This model is highly relevant to hospitals without on-site ID specialists because specialist governance and analytics can be organized provincially while pharmacists deliver daily stewardship locally.

6. British Columbia and Saskatchewan: Networked Versus Centralized Models

British Columbia uses a coordinated network approach. The BC Centre for Disease Control supports community antimicrobial stewardship, while the Provincial Antimicrobial Clinical Expert group brings together representatives from health-authority ASPs, the Ministry of Health, and infection-control partners to coordinate antimicrobial-use priorities across hospitals and long-term care.[4] This model preserves health-authority autonomy while creating a provincial forum for shared expertise.

Saskatchewan offers a more visibly centralized provincial model. In 2025, the Saskatchewan Health Authority ASP reported 44 guidelines accessed 46,032 times through the Firstline application. ASP pharmacists documented 270 antimicrobial reviews, with 85.3% of recommendations accepted, and recorded 310 "curbside" consultations over six months.[5] The program also contributes to provincial restricted-antimicrobial lists, order sets, education, and policy.

For smaller and rural sites, Saskatchewan illustrates how limited specialist personnel can have broad reach when supported by standardized digital guidance, remote consultation, and system-level governance.

7. Quebec: The Value of Centralized Prescribing Guidance

Quebec provides an older but instructive example of centralized prescribing support. Province-wide antibiotic treatment guides developed for physicians and pharmacists were associated with a 4.2% decrease in outpatient antibiotic prescriptions in the first year after distribution, while prescriptions increased by 6.5% in other Canadian provinces over the same period.[6] These historical data are not directly comparable with current hospital ASP metrics, but they demonstrate the potential impact of coordinated provincial guidance and broad clinician engagement.

8. What Should a Canadian Pharmacist-Led Model Look Like?

The provincial comparison suggests that pharmacist-led stewardship should not mean pharmacist-only stewardship. A practical Canadian model for hospitals with limited ID resources is:

- Local pharmacist leadership for prospective audit and feedback, dose optimization, duration review, IV-to-oral conversion, therapeutic drug monitoring, and microbiology-guided de-escalation.
- A physician champion for medical governance and difficult prescriber discussions.
- Regional or provincial access to ID physicians and microbiology for complex cases.
- Provincially or regionally maintained guidelines, antibiograms, restricted-drug criteria, and education.
- Centralized antimicrobial-use dashboards so smaller hospitals are not required to build independent analytics infrastructure.
- Predefined escalation criteria for bacteremia, endocarditis, invasive fungal infection, multidrug-resistant organisms, prosthetic infections, treatment failure, and highly immunocompromised patients.

The pharmacist becomes the daily operational engine of stewardship, while the health system supplies the specialist and data infrastructure that a small hospital cannot realistically reproduce on its own.

9. Implications for Canadian Hospitals With Limited ID Resources

The main Canadian lesson is that stewardship capacity does not have to be located entirely within each hospital. Ontario demonstrates provincial benchmarking; Alberta demonstrates integrated provincial rollout; British Columbia demonstrates coordinated health-authority networks; Saskatchewan demonstrates centralized pharmacist-supported clinical stewardship; and Quebec demonstrates the value of broadly disseminated prescribing guidance.

These approaches can be combined into a hub-and-spoke model: local pharmacists manage routine stewardship, while regional or provincial hubs provide ID consultation, microbiology support, surveillance, guideline development, training, and complex-case escalation. Such a model directly addresses the national finding that smaller hospitals are disproportionately represented among sites without formal ASPs.[1]

10. Conclusion

Canada should not be viewed as having a single antimicrobial stewardship model. Provincial health systems have developed different mechanisms to achieve the same objectives: appropriate antimicrobial selection, dose, route, duration, and monitoring.

Across those models, the pharmacist is the most consistent professional component. The 2025 CNISP survey found pharmacist representation in every formal ASP surveyed, supporting pharmacist leadership as a practical foundation for hospitals with limited on-site specialist resources.[1] However, effective stewardship requires more than pharmacy activity alone. The strongest Canadian model is multidisciplinary and system-supported: local pharmacist leadership, physician partnership, microbiology collaboration, provincial data and guidelines, and reliable access to ID expertise for complex cases.

For rural and smaller hospitals, this provincial hub-and-spoke approach may be more scalable than attempting to reproduce a tertiary-care stewardship team at every site.

Declarations

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