



# A provincial Antimicrobial Stewardship Program

## Successes and Challenges in Alberta

**A**lberta Health Services (AHS) is responding to antimicrobial resistance and contributing to antimicrobial stewardship (AMS) by building and coordinating a structured, provincial stewardship program.

This is a story of the successes and challenges of building a provincial program told from the perspectives of the members of the AHS AMS Committee, an interdisciplinary team working in Edmonton and Calgary. This shared knowledge drawn from practice-based experience can offer insights on useful strategies and resources that may be adaptable to other contexts.

## What's Inside...

Worldwide, antimicrobial resistance has emerged as a serious public health threat. Preserving the ability to use antimicrobials effectively for the future will require far-reaching responses.

In this case study, we describe the processes and structures put in place by Alberta Health Services (AHS) to support and maintain coordinated antimicrobial stewardship programs in the province.



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AHS is a provincial corporation with five geographical zones responsible for health services in the province of Alberta (1). A 2012 analysis of Infection Prevention and Control practices by the Alberta auditor general found that AHS did not have sufficient AMS programming. Physicians and pharmacists in the province were involved in stewardship, but were struggling to build infrastructure for a broader response. Accreditation Canada's 2013 addition of AMS to the Required Operational Practice for medical management provided them with the opportunity to develop a formalized structure for a program across the province, with each geographical zone having AMS programming and reporting in place.

Requests to fund a broader program had been made to various sites over time and the recent [business case template](#) for AMS programs produced by the Association of Medical Microbiology and Infectious Disease Canada became an opportunity to formally request province level funding for physicians, pharmacists, and information technology to support AMS. However the anticipated costs for an entire province were substantial, and due to budget constraints the AHS administration determined

Setting up a process for decision-making and creating the provincial drug formulary are key components of stewardship

that the plan was not fundable and undertook a phased approach to infrastructure development instead.

### Getting Started

The Provincial Drugs and Therapeutics Committee was formed in the spring of 2011, with the Antimicrobial Stewardship Committee (ASC) formed as a sub-committee that fall. Early on, the focus was to set up a process for decision-making and to construct the provincial drug formulary, a critical component for stewardship. The ASC began by trying to get a better understanding of what AMS work was already taking place in the province, starting by informally establishing where infectious diseases (ID) practitioners were working in the province. Later, in 2013, there was a provincial assessment of AMS policies and resources already in place (2). The ASC recognized there were many ID practitioners as well as stewardship personnel and support in Edmonton and Calgary, but there was little support outside of those cities. Despite these human resource challenges and limited availability of personnel to support stewardship, there was interest in applying the same service model across the province. Their question was, how could the ASC enforce policies and procedures broadly in the province without formal structures?

### Governance and Resources

The ASC created a plan for a structure in all of the provincial zones and requested that AHS dedicate resources, including the allocated time for physicians and pharmacists. The plan was supported by AHS leadership because of the need to meet the Accreditation Canada [requirements](#), but also due to the potential cost savings of adapting an AMS program that had been implemented in other organizations. Working groups similar to existing ones in Edmonton and Calgary were formed in the rural zones, accountable to the Medication

Management Committee in the south and to IPC Committees in the north and central zones (3).

The Drug and Therapeutics Committee governs policy, while the ASC has an advisory, educational, and research purpose; their mandate is to prioritize, strategize, and disseminate information (3). The ASC informs the wider view for the province and the local working groups respond to local needs. The groups are accountable via a dual reporting structure and communicate through formal reports (3). Presently, AMS programs in the different zones vary in the amount of organizational support and dedicated full-time equivalent personnel available, from very little—relying on one person for expertise—to more advanced interdisciplinary teams in the major cities.

In the absence of new funding for AMS programs, the ASC created a plan with the resources available. Most of the funding used for AMS programs in Alberta comes through Pharmacy Services, although IPC at the provincial level was able to allocate a 0.3 FTE physician administration lead for the South Sector. A business case was then made to support an equivalent position for the North Sector. Part-time pharmacy drug stewardship leads in three zones were created from the central drug budget to promote efficient use of pharmaceuticals, with some support allocated for stewardship. The program has found it has been easier to make a business case for AMS in a single institution rather than for the province as a whole, and a few acute care facilities were able to allocate pharmacists to AMS using a business case to request funding.

### Knowledge Translation

Translation of knowledge in the AHS AMS program is focused on providing stewardship and best practices information to build capacity among frontline healthcare

#### Recommended AMS program supports

The AMMI business case recommends that the following human resources be secured to adequately support AMS programs:

Physician: 1.0 FTE per 1000 acute care beds

Pharmacist: 3.0 FTE per 1000 acute care beds

Project/Program Administrative and Coordination Support: 0.5 FTE per 1000 acute care beds

Data Analyst: 0.4 FTE per 1000 acute care beds

Source: <https://www.ammi.ca/?ID=126&Language=ENG>

providers, using strategies and structures to reach as many personnel as possible. Information is disseminated on the website and through web-based “backgrounders” —[Antimicrobial Stewardship Backgrounders](#) that outline practical guidelines for frontline providers to improve antimicrobial use (3). Members of the AMS program report that passive education has not been highly effective and so pharmacists have been encouraged to actively distribute information to their prescribing colleagues to promote discussion and encourage changes in prescribing habits. AMS medical leads have provided education and direction to medical and administrative leaders in each of the zones, allowing these leads to subsequently disseminate information to the people under their authority. The team wants to align with the evolving Quality and Healthcare Improvement infrastructure in AHS as a key operational partner.

The ASC has provided frontline healthcare providers with online learning modules, antibiograms, and Bugs & Drugs, an antimicrobial reference tool accessible within Alberta and British Columbia as either a mobile application or

website ([www.bugsanddrugs.org](http://www.bugsanddrugs.org)).<sup>1</sup> A commercial mobile application, [Spectrum](#), developed locally for Calgary, can incorporate local AMS data and can be customized for other settings. The Antimicrobial Stewardship Manual, developed by Covenant Health<sup>2</sup> in collaboration with ASC members, outlines how sites are required to practice, site and zone committee structure and composition, process and outcome measures, strategies, and includes guidance documents (4). The AMS program also has the advantage of being affiliated with [Do Bugs Need Drugs?](#), a well-established program that directs education on antibiotic use to a range of audiences (health care providers, children, parents, schools and workplaces) and which works with many Alberta long-term care centres (5).

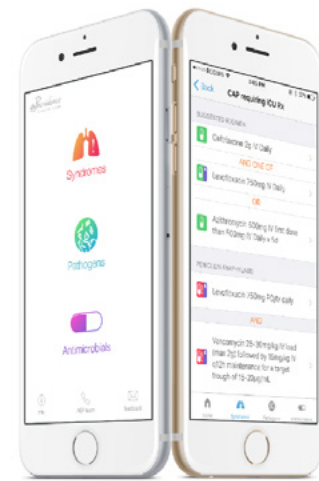
To build capacity and knowledge, AHS has created a preceptorship program for pharmacists and other professionals that immerses learners in an AMS program for two weeks. Trainees work with ID physicians and AMS pharmacists in a Calgary or Edmonton tertiary care centre with the goal of expanding capacity outside of the major cities. An advanced one-year post-ID training fellowship is also available, which the team feels is necessary to increase AMS expertise in the province. The AMS program has also developed online modules available to all staff within AHS intended to support frontline staff in stewardship interventions.

## Monitoring AMS programs

Evaluation of AHS AMS programming is basic at this time, although there is work underway to expand outcome

<sup>1</sup> *Bugs & Drugs* was developed by Dr. Edith Blondel-Hill and local pharmacist Susan Fryters in 1997-98. The most recent edition of the book (published in 2012 by AHS) has since been replaced by iTunes and Android apps and the [bugsanddrugs.org](http://www.bugsanddrugs.org) website.

<sup>2</sup> Covenant Health is a Catholic organization with acute and long-term care facilities.



**Figure 1.** Spectrum app for iPhone

monitoring. Current evaluation elements include a review of reports and protocols. For example, some sites and zones have incorporated routine IPC reports on *Clostridium difficile* infection (CDI) and other nosocomial infections. As well, Pharmacy Services reports province-wide use of 14 antibiotics that are associated with risk of CDI in select hospitals in each zone and compare their prescribing rates to a baseline rate to evaluate antimicrobial use and targeted interventions. Acute care sites also have internal reports on individual antimicrobial use. Antimicrobial reports specific to a prescriber will be able to provide individual level feedback.

The goal of AHS AMS is to have a common Clinical Information System (CIS) and to be able to generate provincial reports on antimicrobial use in Defined Daily Dose (DDD) per 100 patient days.<sup>3</sup> Pharmacy Services currently has a dose project that includes data collection from 4 to 5 major centres but the collation of data in different forms from various pharmacy computer systems is laborious, and a data analyst, technicians, and user-friendly data are needed to expand reporting capabilities.

<sup>3</sup> DDD per 100 patient days is a measure defined by the World Health Organization to standardize comparison of drug consumption. See: [http://www.whocc.no/ddd/definition\\_and\\_general\\_considera/](http://www.whocc.no/ddd/definition_and_general_considera/)

## Challenges in Developing Stewardship Across Alberta

The AHS AMS team is small though growing, and they are passionate about their work. They identify many challenges and view their current successes to be modest since the beginning of their program in 2013. While some of the team members are optimistic that they are making headway with their current resources, others feel that they have come a long way but have limited ability to move beyond project work without consistent funding for stewardship pharmacists and physician time to support ongoing prospective audit and feedback and other key activities. They want to see a shift from interest to commitment, action, resources, and participation. They also want to continue to build capacity outside of Edmonton and Calgary to the less resourced zones, but grapple with whether resources should be used to build on successful programs or to build capacity within smaller sites.

Team members feel they are still building AMS programs within all of the zones and creating antimicrobial guidelines for a successful provincial program. Where there are guidelines, their existence does not mean they are being applied. The team struggles with how to implement guidelines and are working toward prospective audit and feedback with real-time assessment and recommendations for patients prescribed antibiotics. They feel they need more uptake and buy-in from healthcare providers, as there are still some who are not interested in developing or supporting site based AMS. Their question is, how do they get all of the zones engaged in AMS and ensure they do not become burned out by the work?

In some of the major hospitals and long term care facilities in Edmonton and Calgary (as well as some other parts of the province) more advanced stewardship

programming and interventions were in place before the AHS program was started. According to some ASC members, it has been difficult to separate what should be provincially supported and what is the responsibility of the zones or sites. They say that it has been a challenge to bring together groups that have been practicing differently, and to create standardized approaches. Sometimes the groups focus on differences, but they are learning to work strategically, with the outcomes and commonalities being more important than the process, and have worked towards a goal-focused approach to programming.

There continues to be a need to educate and establish buy-in from frontline healthcare providers in the province to raise awareness of the ASC work, and to build the capacity to practice AMS. The focus of the AMS program currently is acute care, but the affiliation with Do Bugs Need Drugs? aligns with AHS Public Health and works with many long term care centres in Alberta. Communication is a challenge between the different setting and organizations so team members ask the question, what can be done to improve care overall? They want to come up with initiatives that can be applied universally or almost universally within the province.

Overall, some team members say they are unable to pinpoint challenges because they are not yet sufficiently measuring their success. They feel they need data analysis support that can provide prescribing data for meaningful evaluation and as a tool for prescribers. Merging diverse data systems, including some paper based systems, will be a significant challenge to identifying timely antibiotic use issues and to measure intervention outcomes.



## Successes in Antimicrobial Stewardship in Alberta Health Services

Members of the team consider that the most important success of the AHS AMS program is the increased dialogue and recognition of AMS as a priority. Creation of the ASC provided a structure for leadership with provincial support. The provincial formulary provided the framework and mechanism to collect, review, and build antimicrobial guidelines and restrictions. All in all, they have a better understanding about stewardship around the province. Dual reporting between the zones and the AMS committee has facilitated communication and standardization of practices within the province, and organization including leadership and initiatives in the three rural zones has progressed.

The Antimicrobial Stewardship Backgrounders, actively promoted by Pharmacy, have been useful to share information and guidelines. Protocols have been created for surgical prophylaxis, CDI management, and a Day 3 Bundle to encourage timely reassessment of antibiotics. The distribution of the Bugs & Drugs book and online resources has led to widespread use, as evidenced by a 2013 survey of pharmacists (2). The [Reduce Your Antibiotic Footprint](#) campaign, first advertised for Antibiotic Awareness Week in 2015, promoted AMS and focused on prescribers in hospitals. The team names their quarterly Utilization report of 14 antibiotics relevant to CDIs as an advancement, as it allows sites to track their own results. The team also views their preceptorship program as a success in developing capacity for AMS outside of major centres. The program, though relatively new, intends to provide a connection and access to an AMS team that serves as a resource to the trainees when they return to their own workplaces.

### AHS Goals for AMS Program

1. Ensure infections are managed effectively, with preservation of the value of antimicrobials
2. Optimize clinical outcomes in Albertans receiving antimicrobials to decrease infection related morbidity and mortality
3. Minimize antimicrobial-related adverse effects, toxicities and promote patient safety
4. Minimize unintended consequences of antimicrobial use, such as selection of antibiotic resistant strains and *Clostridium difficile* infection
5. Use standardized tools to measure antimicrobial utilization within acute care institutions across Alberta

Source: <http://www.albertahealthservices.ca/assets/Infofor/if-hp-antimicrobial-program.pdf>

## What's Next for the AHS Antimicrobial Stewardship Program?

As the AHS AMS Program looks to the future and works to build on their current successes, they are building their capacity and expanding their approach to provincial AMS programming. They are always trying to identify the broad, provincial-level supports for AMS that can be provided, and encouraging more local initiatives in the three rural zones. Currently expanding on smaller projects, the team is working toward

protocols for asymptomatic bacteriuria and providing recommendations for managing polymicrobial infections.

The AHS AMS Program team feels that they need more dedicated, resourced local stewardship champions and tools such as clinical information systems, to implement AMS at all sites. They want to expand their ability for data analysis and to establish common data sets, which could support increased productivity and evaluation. Although some are more optimistic that they are making headway by cobbling together what they have, they all agree that they need more resources, including physicians and pharmacists with AMS expertise, data analysis and administrative support.

## Advice for Others

*"Progress only happens when there is action towards a goal."*

So what is the advice for senior leadership when considering a broader, regional AMS program? The AHS AMS team thinks it is important to look at what you have and to plan a structure for a systematic provincial approach to AMS. Then it is important to decide what needs to be accomplished. What provincial supports can be put in place to support frontline providers and patient care and how can they be integrated with local initiatives or interventions?

The team recommends developing a business case to obtain resources in the beginning, rather than working at it backwards. They see buy-in and support from the top is key to success, as there are many competing priorities in healthcare. Having the tools and resources in place, as well as an evaluation plan from the beginning, enables an effective strategy. The AHS AMS team also thinks that it is important to focus on expanding capacity outside of major centres. There is a tendency for less resourced sites to feel they do not have anything to contribute, but it is important for all areas to be engaged and to be a part

of the conversation for a wide-reaching approach. They recommend examining the resources that are available and successful (including people, projects, materials, and systems), to move towards provincial AMS programming and interventions.

Finally, the AHS AMS team also thinks that education and creating awareness are not enough, but that there needs to be the opportunity and the ability for all healthcare providers to function as partners in stewardship. Practitioners already have very full days, so finding the means to improve their efficiency and make antimicrobial stewardship easy to implement are important for gaining acceptance and moving stewardship forward.

AHS AMS started by agreeing on a common antimicrobial formulary and the provincial structure for an AMS program. The team feels it is important to build a business case for AMS and recommends using tools such as the AMMI template to help build a case and gain healthcare leadership support for introducing or expanding an AMS program.

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### IMAGE CREDIT:

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## Points to take away...

Key factors in the growth and success of AMS programs in Alberta include:

- Provincial level leadership and support from the AMS Committee as well as the provincial formulary provided the framework and mechanism to collect, review, and build antimicrobial guidelines and restrictions
- Dual reporting between the zones and the AMS committee that facilitates communication and standardization of practices across the province
- Active promotion and education about the resources available for AMS
- A preceptorship program that can provide connections and access to an AMS team for trainees when they return to their own workplaces

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