

## Development of an Antimicrobial Stewardship Program in a Rural and Remote Health Authority

Bacterial resistance and adverse effects from antimicrobials are growing concerns in the general public and health care systems nationwide. Antimicrobial stewardship (AMS) is a term used to refer to a variety of interventions for improving and measuring the appropriate use of antimicrobial agents (antibiotics, antifungals, antivirals), with the aim of achieving optimal clinical outcomes related to antimicrobial use.<sup>1</sup> For 2013, Accreditation Canada developed a new Required Organizational Practice, which stated that organizations providing acute care services must have a program for AMS.<sup>2</sup>

Northern Health provides health services to about 300 000 people over a geographic area of 600 000 km<sup>2</sup> in British Columbia. Within this health authority, there are more than 2 dozen health facilities, of different sizes and degrees of remoteness. There is large variability in the number of health care professionals at each site, with some sites having only virtual (i.e., electronic) access to certain health care professionals at any given time. The purpose of this article was to describe the establishment of an AMS program within Northern Health, a rural and remote health authority with limited funds and human resources.

A gap analysis was performed using a checklist created by Public Health Ontario (available at <https://www.publichealthontario.ca/en/eRepository/Getting%20started%20-%20An%20ASP%20gap%20analysis%20checklist.pdf>) to identify areas of AMS that were already being performed within Northern Health and to help identify the gaps where resources would be required to meet accreditation standards. A literature review (based on a search of Embase for articles published between 1947 and 2015) was undertaken to identify the current state of knowledge related to the development of AMS programs in rural and remote settings. The gap analysis and the literature review were integrated into recommendations for the formation of and resources required for an AMS program.

The literature search identified 8 articles that were deemed of interest to the authors.<sup>3-10</sup> Various aspects of these reports were incorporated into the planning and development of the Northern Health AMS program. The gap analysis and literature review indicated that the program coordinator should form an AMS working group, which would be responsible for implementation of and provision of direction for the following elements of an AMS program:

- policies and procedures regarding antimicrobials within Northern Health
- development and/or endorsement of clinical decision support tools regarding the appropriate use of antimicrobials
- development of educational tools to meet the needs of Northern Health staff on matters related to safe practices and appropriate use of antimicrobials

Areas where stewardship duties were already established in the region included alignment with the provincial formulary, restrictions on targeted antimicrobials, existence of annually updated antibiograms, and existence of a few site-specific order sets for infectious diseases. Areas identified as needing attention included standardized and consistent clinical pharmacy services (or service pathways, for sites without pharmacists), creation of order sets for common infectious diseases, formation of clinical guidelines, and development of audit and feedback services.

Given the quantity of work and the rural and remote nature of Northern Health, it was acknowledged that dedicated personnel would be required. A 1.0 full-time equivalent clinical pharmacist position was created to lead the AMS program. Responsibilities of the role include creation and revision of antimicrobial order sets and clinical pathway tools for clinicians, audit and feedback services, analysis of relevant metrics, and provision of patient-specific clinical pharmacy support to the entirety of Northern Health.

The role of medical director (preferably to be filled by an infectious diseases physician with an interest in AMS, who would be accountable for physician leadership for AMS-related matters) was also identified as critical to the development of an effective AMS program. Finally, dedicated data analyst support was recognized as essential in supporting AMS work, given the large number of dynamic factors for which data collection and analysis would be required to inform future AMS goals and activities.

Within the first year of the AMS program (October 2014 to December 2015), the development of antimicrobial order sets, clinical pocket-cards that promote dose optimization and proper empiric treatment of common infections, and increased antimicrobial data collection and analysis were identified as key areas that required action. The AMS lead (A.R.) spent a large amount of time during the initial year working on these activities. Marketing AMS to all types of health care providers was also identified as important, because this activity helps to inform staff members about the purpose and activities of the AMS program. A number of newsletters, memos, and an internal online repository were created to realize the marketing goal.

In conclusion, after a literature review and gap analysis, it was determined that dedicated staff would be required for the establish-

ment and continued existence of an AMS program in a rural health authority. A clinical pharmacist, a physician medical director, and dedicated AMS data analyst support were all identified as required components for a successful AMS program.

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**Robert T Pammett**, BSc, BSP, MSc

Research and Development Pharmacist – Primary Care

**Alicia Ridgewell**, BScPharm, ACPR

Antimicrobial Stewardship Program Coordinator

Northern Health

Prince George, British Columbia

Robert Pammett is also an Assistant Professor (Partner) with the Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, British Columbia.

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