The role of pharmacists in rural practice

Canada’s geography and overall low population density has led to challenges in providing health care to those in rural communities. Pharmacists play a fundamental role in providing optimal pharmacotherapy, managing patients with chronic conditions and improving the delivery of care to meet the health care needs of rural Canadians. This issue of the Translator explores pharmacist education and recruitment to rural communities and demonstrates the expanding roles pharmacists play in rural health care:

- Rural education in Canadian pharmacy programs
- Advanced prescribing authorization allows pharmacists to manage rural anticoagulation clinic
- Pharmacy and pharmacy technician teams improve patient care by providing clinical pharmacy services in rural hospitals
- Pharmacotherapy services provided by a clinical pharmacist in a rural nurse practitioner-led clinic positively affect patient outcomes

Rural education in Canadian pharmacy programs


Issue: Canadians living in rural, remote and northern communities have poorer health status, limited access to health care services and greater disparities in access to health care providers than Canadian residents in urban settings. In the report Building on Values: The Future of Health Care in Canada, commissioner Roy J. Romanow stressed the importance of providing unique approaches to improving health and access to care. Many Canadian organizations, such as the Canadian Institutes of Health Research (CIHR), the Canadian Pharmacists Association (CPhA) and the Association of Faculties of Pharmacy of Canada (AFPC) have developed policies, strategies and programs to identify changes to pharmacy practice to improve health care delivery. Despite these well-intentioned strategies for providing patient-centred, outcomes-focused care for all Canadians, pharmacist education and recruitment in rural and northern communities remains lower than in urban areas.

A solution: To recruit and retain pharmacists in rural and northern regions, decision-mak
Anticoagulation Management, as well as limited to larger urban centres or service. Currently, Canadian AMS programs are usually cost savings to the health care system. Cur. Urgency visits, improved patient outcomes and optimizing therapy and have led to superior Services (AMSs) have been successful in A solution: may not be adequately monitored to maintain factors affecting their blood test results and patients may have limited education about of medication. Unfortunately, in this model, tests, office appointments and adjusting doses for their patients, including coordinating lab locations manage anticoagulation therapy and contact information for especially trained anticoagulation pharmacist. The patient was provided a folder of written information, tools for managing their warfarin therapy and contact information for one hour for assessment and education. The patient was provided a folder of written information, tools for managing their warfarin therapy and contact information for ongoing support by the pharmacist. 

Implications: Although pharmacy guidelines had strong support for the pharmacist's role in providing optimal medication management, there were limited references to rural or northern health care initiatives to improve health status among rural Canadians. References were made to issues such as access to health care, health status and recruitment and retention; however, terms such as Aboriginal, Northern and determinants of health were absent. All pharmacy curricula included rural experiential placements, although only University of Waterloo included rural health course content. In studying the human resource capacity of pharmacists, it was found that the number of pharmacists was relatively low in northern regions, in some areas as low as 46 pharmacists per 100,000 people (the Canadian national average is 102 pharmacists per 100,000 people). A model for university-pharmacy collaborative rural models was seen in Australia, where the Rural and Remote Workforce Development Program was implemented after recognition of the need to systematically provide infrastructure support for rural pharmacists. 

These findings support the development of a coordinated and multifaceted approach to pharmacist education, recruitment to northern and rural areas and collaborative education models to improve the health care accessibility and status of Canadians in northern and rural areas. 

It should be noted that the CIHI pharmacy workforce demographic data was not available for Yukon, Quebec and Nunavut for 2008 and Quebec and Nunavut for 2009.

### Background or research methods:
Professional guidelines from CPhA, AFPC and the Canadian Society of Hospital Pharmacists were searched for a number of terms related to rural or northern health care and health status. The terms searched were those used in the Romanow Report and the CIHR Strategic Research Initiative: Aboriginal; access to health care; determinants of health; ehealth; First Nations; health status; northern; recruitment and retention; remote; research; and rural. Faculty of Pharmacy websites were reviewed for information regarding rural or northern pharmacy practice, curricula and other educational opportunities. To investigate pharmacist availability in northern and rural regions, demographic data for pharmacists were obtained through the Canadian Institute of Health Information (CIHI) document.

### Financial support:
Funding for this study was provided by the Canadian Institutes of Health Research.

## Advanced prescribing authorization allows pharmacists to manage rural anticoagulation clinic


**Issue:** Managing warfarin therapy in patients who require it can be a complex and daunting task for both patients and family physicians. Improved patient outcomes are seen most often in those who achieve and maintain an international normalized ratio (INR) value within a narrow therapeutic range. There is a risk of bleeding associated with values that are too high and a risk of clotting when too low. Traditionally, family physicians in rural locations manage anticoagulation therapy for their patients, including coordinating lab tests, office appointments and adjusting doses of medication. Unfortunately, in this model, patients may have limited education about factors affecting their blood test results and may not be adequately monitored to maintain their INR in the optimal range.

**A solution:** Anticoagulation Management Services (AMSs) have been successful in optimizing therapy and have led to superior patient INR control, decreased hospital emergency visits, improved patient outcomes and cost savings to the health care system. Currently, Canadian AMS programs are usually limited to larger urban centres or service speciality patient populations.

**Patients are contacted by the pharmacist at least once a month, […] allowing them to take a more active role in their therapy and leading to better health outcomes**

In January 2003, the first rural AMS was successfully implemented in Athabasca, Alberta. The Athabasca AMS was initially funded as a research project. The goal was to extend AMS services of the core AMS clinic located at the University of Alberta Hospital, in Edmonton, Alberta, into rural communities by establishing satellite clinics. The satellite pharmacists were provided education, practical clinical experience, operating procedures and ongoing support. Upon initial enrolment into the AMS program, patients met with a specially trained anticoagulation pharmacist for about one hour for assessment and education. The patient was provided a folder of written information, tools for managing their warfarin therapy and contact information for ongoing support by the pharmacist.

**Implications:** Over the next six-year period, the Athabasca AMS had expanded to enrol 275 patients and by the fall of 2010 was actively managing 170 patients. Subsequent to the research funding, the former Aspen Health Region Foundation funded the program for a 0.6 full-time equivalent (FTE) AMS pharmacist. With the restructuring of Alberta Health Services (AHS), the AMS was deemed to be too large for the staffing provided. With no further budget being allocated to the service, the clinic was capped at 125 active patients. The formation of a Primary Care Network in the Whitecourt area allowed for an AHS pharmacist to initiate a small version of the AMS clinic to manage patients in that community. The Athabasca AMS continues to function primarily for patients located locally and has provided care for 330 patients over the past 9 years. There is 100% support of the program by the local physicians, including those with patients in ambulatory care, acute care, as well as long-term care and nursing homes.

Because of regulations enabling the advanced prescriptive authority for pharmacists in Alberta, AMS services work well in the rural and urban settings, allowing for patient care without referral to a physician.

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Patients are contacted by the pharmacist at least once a month, regardless of their INR level, encouraging them to take a more active role in their therapy, leading to better health outcomes and reducing the likelihood of an out-of-range INR. Patients who travel out of the country or work in remote areas can be managed by using home-monitoring INR devices and entering their values in an online software program, allowing for continuous care. The AMS is also able to manage patients as their health care requirements change, ensuring that patients are monitored throughout transitions due to aging or disease progression whether they function independently in the home, a senior’s lodge, long-term care facility, nursing home or upon admission to the acute care hospital. Pharmacist-managed rural AMSs are not without their challenges. The current fee structure in Alberta only supports compensation to physicians as a fee-for-service and thus changes are required to support pharmacist involvement and training. Demand for provision of the anticoagulation management service is so high that this AMS has reached its maximum capacity given the current AHS funding and staffing. Innovative software and web-based software is also necessary to provide seamless integration of care.

Using this model of specialized training and clinical expertise, pharmacists could potentially manage care for many chronic conditions such as hypertension, cholesterol and diabetes, all of which could lead to better health outcomes for rural patients.

**Background or research methods:** The goal was to enrol 50 patients, but the Athabasca AMS successfully recruited 77 patients at the start of the study. By the end of the study, it was clear that patients preferred to be managed by the AMS. Servicing patient referrals as far as 90 km away, the AMS gradually gained the confidence and acceptance of all the local physicians. Although some physicians immediately enrolled all their anticoagulation patients, some doctors used the service only for complicated patients and 1 physician preferred to manage his own patients. In 2004, a physician in Whitecourt, Alberta (a town 230 km from Athabasca) discovered the service and began referring patients. As this extended travel was not practical, the AMS was able to effectively use Telehealth technology to provide initial “visits” for patients enrolled in the program. The Athabasca AMS is also able to access lab values via local systems or through Alberta Netcare, a portal for electronic patient health records, so that patients can have blood drawn from any number of medical laboratories.

**Implications:** As a result of this project, more interventions were made for rational use of antibiotics and pharmacists spent less time performing interventions (5085 minutes by regional pharmacists prior to the intervention and 1751 minutes following implementation). The most common type of intervention was related to drug choice, with the most common drug being cefotaxime. With a shortage of pharmacists in rural practice sites, pharmacy technicians can offer a means to provide appropriate patient care and thus improve the health outcomes of rural patients.

**Issue:** Although clinical pharmacists provide valuable services through direct patient care in hospitals, the budgetary burden on hospital pharmacy departments makes providing these critical services difficult. The lack of clinical pharmacy services is especially apparent in rural hospitals, where access to pharmacists and pharmacy technicians is limited. To help combat this problem, there has been an expansion in the use of specially trained pharmacy technicians to allow pharmacists to be appropriately utilized.

**A solution:** Clinical pharmacy technicians are technicians who take on clerical roles traditionally assigned to pharmacists, such as medication history-taking, drug-use evaluation, investigational drug services and clinical management tasks. In doing so, pharmacists are available to provide more clinical services.

This study analyzed clinical interventions related to the rational use of antibiotics performed prior to and following the addition of clinical pharmacy technicians at two rural hospitals. The outcomes measured were the number of interventions performed and the amount of time spent by pharmacists and technicians gathering clinical information and performing clinical administrative tasks. The results showed that clinical interventions increased from 69 in the 3 months pre-intervention, to 115 in the 3 months post-intervention.

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It should be noted that the pharmacy technicians who took part in this intervention were highly experienced in providing patient care and there is a need for advanced training for pharmacy technicians if they are to be used to their full capacity. Provincial regulatory bodies, attitudes of pharmacists and resources available may also limit expansion of the role of clinical pharmacy technicians.

**Background or research methods:** Two rural hospital sites were involved in this study, neither of which had previously been providing clinical pharmacy services. Prior to the study, basic pharmacy services at each hospital were provided by 1 full-time equivalent (FTE) on-site pharmacy technician. Technicians at both hospitals had been responsible for providing some direct patient care, with roles such as attending nursing reports, checking patients’ own medications on the floor, clarifying orders, assisting with double-check of medication doses and providing general drug information. Prior to the intervention, the technicians were given training on the role of the clinical pharmacist, examples of clinical pharmacy care plans and types of interventions and responsibilities in the delivery of clinical pharmacy services were clarified and documented. At the end of the project, descriptive statistics were used in the analysis and a statistical report was generated for data that had been entered into the patient profile system.
Pharmacotherapy services provided by a clinical pharmacist in a rural nurse practitioner-led clinic positively affect patient outcomes


**Issue:** Patients in rural communities face many barriers to adequate health care, such as limited financial resources, low educational status and lack of adequate transportation. Because physician recruitment and retention in rural areas can be challenging, nurse practitioners and physician assistants can be of great benefit in providing primary health care services to a broader range of patients. However, these mid-level prescribers often have limited training in pharmacotherapy management and can benefit from the addition of a clinical pharmacist to the health care team. Clinical pharmacy services also positively influence the health care of patients by offering disease management programs and patient education to areas where health care services are limited.

**A solution:** In 2001, a health centre in rural Alabama formed a collaborative relationship with a clinical pharmacy faculty member and was established as a site for interdisciplinary education and clinical pharmacy services. Pharmacotherapy services were developed and patients were referred to the clinical pharmacist by the nurse practitioner. Initially, the program had a focus on dyslipidemia management, although any patient could be referred to the pharmacist for disease management or education. Over the 32-month study period, 126 patients were referred to the clinical pharmacist.

This study reviewed chart data from patients referred to the clinical pharmacist from February 2004 through July 2011. Data were collected on patient demographics, reason for referral, insurance status, clinical interventions and clinical outcomes, among other factors. The results showed that over the 32-month period, the majority of patients who were referred to the pharmacist attained their goal for LDL cholesterol, blood pressure, HbA1c and INR (76%, 86%, 69% and 82%, respectively) (p < 0.05).

**Implications:** The addition of a clinical pharmacist to nurse practitioner-led rural health clinics can positively affect patient health and management of chronic conditions. Pharmacist involvement in rural primary health care, especially in collaboration with physician extenders, is essential for achieving goals of chronic disease management. It should be noted that this study was simply a retrospective review to quantify clinical pharmacist interventions. Better evidence to support the value of the pharmacist in managing chronic conditions in rural health care settings would have been seen in a comparison of patients managed with the help of a pharmacist versus those solely managed by the nurse practitioner.

**Background or research methods:** For the period in which data was collected, the clinical pharmacist made 3938 educational interventions and 732 clinical interventions during 708 patient visits. Educational interventions included consulting on medications, diseases, therapy goals, medication adherence, diet, exercise, tobacco cessation and other patient issues. Clinical interventions included initiation or discontinuation of pharmacotherapy, dosage adjustments, preventive care recommendations, anticoagulation management and smoking cessation management. Changes in LDL cholesterol, blood pressure and HbA1c from baseline were analyzed using Student’s t-test to determine statistical significance (p < 0.05).