

# High Impact Practices


## Clinical Pharmacy Services in Home Care

Optimizing medication regimens, reducing adverse events and increasing satisfaction



### About High Impact Practices

The Canadian Home Care Association (CHCA), as a national voice, promotes excellence in home care through leadership, awareness and knowledge to shape strategic directions. The Association is committed to facilitating continuous learning and development throughout the home care sector to support and promote innovative and effective practices across Canada.



During the CHCA's annual Home Care Summit, health care leaders from across Canada and abroad share new and emerging approaches to home care and engage in dialogue about their experiences so that leading practices from across the country and, around the world, can be examined and adopted. Every year there are initiatives that stand out – those that clearly will impact the health care system. The potential of these practices is such that home care stakeholders want to hear more and are eager to explore the applicability within their respective jurisdictions. Building on the momentum of the Home Care Summits and recognizing the potential “ripple effect” of expanding the dissemination beyond the Summit participants, the CHCA has undertaken to document and publicize a selection of these innovative practices from across the country as High Impact Practices.

### EACH OF THE HIGH IMPACT PRACTICES:

- **Promotes** home care that provides evidence-informed service delivery directed toward the achievement of health outcomes in the settings that best support the individual, and family
- **Enhances** the effectiveness of home care
- **Raises the awareness** of the ways that home care contributes to an effective health care system
- **Mitigates** rising health care costs and accentuates existing resources and expertise
- **Enables sharing** and transferring of knowledge, expertise and experience through networking and peer-to-peer learning.

### *Thank-you to our High Impact Practices Partners...*

The South-East Regional Health Authority (SERHA) and New Brunswick's Extra-Mural Program (EMP).

The SERHA is one of the largest health authorities in New Brunswick and is a longstanding member of the CHCA. The EMP, established within all the Regional Health Authorities in New Brunswick, plays a significant role in meeting the increasing demand for community based services at the SERHA. The SERHA and the EMP are proud to contribute to the advancement of leading practices in home care in Canada.



# Clinical Pharmacy Services in Home Care

## SUMMARY

Presented by staff from the South-East Regional Health Authority<sup>1</sup>, this pilot project demonstrated the important role of the pharmacist as a member of the home care team.

The *Clinical Pharmacy Services in Home Care* pilot project involved the pharmacist providing a variety of clinical pharmacy services (e.g. comprehensive or focused medication regimen review, adverse drug

event assessment, medication adherence assessment, medication monitoring, and medication education) to patients who were recently discharged from hospital and deemed to be at high risk of an adverse drug event. This patient population and model of practice was chosen based on the findings of Canadian research indicating that adverse drug events account for 66% of adverse events which occur within the initial three weeks following discharge from hospital.<sup>2</sup>

### *New Brunswick Extra Mural Program*

Established in 1981, the Extra Mural Program (EMP) is New Brunswick's provincial home care program which is integrated with, and managed by, the eight Regional Health Authorities. The mission of EMP is to provide a comprehensive range of coordinated health care services for individuals of all ages for the purpose of promoting, maintaining or restoring health within the context of their daily lives.

The Extra-Mural professionals provide health care services that include: assessment, interventions (including treatment, education and consultation), service planning and coordination. Professional service providers may include: nurses, registered dietitians, respiratory therapists, occupational therapists, physiotherapists, speech language pathologists and social workers. Services offered include: acute care, palliative care, home oxygen program, long term care assessment, early language services and rehabilitation services.

For more information on EMP, visit [www.gnb.ca/0051/0384/index-e.asp](http://www.gnb.ca/0051/0384/index-e.asp)

The approach was to provide weekly home visits by the pharmacist for a minimum of three weeks upon receiving a referral from a home care nurse in order to address medication-related issues at home.

Patient demographics, reason for referral, types of recommendations, significance of the recommendations and acceptance rate of these recommendations by the health care team were evaluated. The findings clearly validated the important contribution of the pharmacist to the home care team. The cycle of emergency care and hospital re-admissions.

#### **Special thanks to the following individuals who provided advice, answered our questions and reviewed this paper:**

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## Project Background

Across Canada, health care is increasingly moving from delivery in acute care settings to community settings. In New Brunswick, notwithstanding the well-established Extra-Mural Program (EMP) delivering home services across the province, the government identified enhanced home care services as a priority area in the provincial health plan for 2004-2008.<sup>3</sup>

Within the EMP at the time of this project initiation, there were well-established clinical services provided by nurses, physiotherapists, occupational therapists, dietitians, respiratory therapists, speech language pathologists, and social workers; however, as with many other jurisdictions in Canada, a pharmacist was not yet an integrated member of the home care team.

It was, and is still, accepted that pharmaceutical research and development is helping to reduce the need for more invasive procedures. With the increasing number of people receiving more complex care at home there is a corresponding increase in the number and complexity of medications administered in that setting. Medication safety and the impact in the health care system, and most importantly, the patient's clinical outcome and quality of life, is a health care priority not only in home care but across the entire continuum. The inappropriate use of medications results in significant costs to our health care system and accounts for major health consequences for individual Canadians every year.<sup>4</sup> A recent study in Ottawa identified that 19% of patients had an adverse event post discharge from hospital and of these, adverse drug events were the most common type of event, accounting for 66% of all adverse events.<sup>5</sup> Accordingly, staff from the South-East Regional Health Authority believed that as medication experts, pharmacists could offer support to professionals working in the home, and to the broader health care team, and could contribute to improved patient outcomes in the home care setting.

The *Clinical Pharmacy Services in Home Care* pilot project was launched in November 2004 to evaluate the impact of clinical pharmacy services in home care. Specifically, the team was interested in knowing the:

- Rate of medication-related issue identification
- Number of recommendations made
- Acceptance rate of recommendations
- Clinical significance of pharmacist recommendation
- Extent of patient and nurse satisfaction with the clinical pharmacy services

The pilot was a partnership between EMP, the South-East-Regional Health Authority, Mount Allison University and the Medbuy Endowment Fund.<sup>6,7</sup> The partners targeted 30 patient participants in order to inform their evaluation.

## Implementation

The *Clinical Pharmacy Services in Home Care* pilot project involved the pharmacist, upon receipt of a consult, in the provision of a variety of clinical pharmacy services to patients who were recently discharged from hospital and deemed to be at high risk on an adverse drug event.

The patient inclusion criteria were defined as those who:

- Were recently discharged from the care of a family Practice/Geriatric service or an Internal Medicine service (excluding oncology) to the Driscoll Unit of EMP
- Were expected to be under the care of EMP for at least three weeks
- Lived at home (excluding residential facilities or group homes where medication assistance is provided)
- Were deemed to be at 'high risk' of adverse drug events, by meeting one or more of the following criteria:
  - Being equal to or greater than 80 years of age
  - Using five or more chronic medications
  - Using a 'high risk' medication (e.g. medication with a narrow therapeutic window such as warfarin)
  - Having a chronic condition associated with a substantial risk of readmission to hospital
  - Having acutal or potential suboptimal adherence with medication
  - Having unresolved medication-related issue(s) upon hospital discharge

The criteria were initially chosen to ensure a manageable workload for a 0.5 full-time equivalent pharmacist position. However, in practice, these criteria were very inclusive as a high percentage of EMP patients met at least one of these criteria.

Upon receiving a referral from a home care nurse, the pharmacist visited the patient as soon as possible. The pharmacy intervention involved an initial home visit and two follow up visits (in the home or by telephone) at weekly intervals. The type of services provided by the pharmacist included:

- Comprehensive medication regimen assessment

- Focused medication assessment
- Medication adherence assessment
- Adverse drug event assessment
- Medication monitoring (for efficacy or toxicity)
- Medication education (to patients and/or caregivers)

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“I felt that our patients were safer at home with this service.”

~ EMP Staff

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The pharmacist documented the interventions in the patient EMP chart thereby facilitating follow-up and reinforcement of instructions by the home care team. (In New Brunswick EMP there is one chart located within the EMP office). Additional information relating to patient hospitalizations, clinic visits, and diagnostic and laboratory tests was contained in the health authority’s Electronic Medical Record (EMR). The pharmacist had access to this information to assist with the assessment. Recommendations to other members of the health care team were submitted in writing using appropriate consultation forms and were often supported by a telephone call directly to the prescribing physician or other health care professional.

## Evaluation

A key component of the pilot project was evaluation in order to determine the significance of the pharmacy contribution within home care. Of the 30 patients participating in the pilot, the results of 27 are discussed as three patients were discharged from EMP prior to the first pharmacy visit. Of the 27 patients, 15 patients received three home visits, while the remaining 12 patients received either fewer or more than 3 visits: (a) 2 patients received 1 visit (1 was readmitted to hospital, and 1 died), (b) 3 patients received 2 visits (2 were readmitted to hospital, 1 was discharged from EMP), and (c) 5 patients received 4 visits and 2 patients received 5 visits because of ongoing medication-related issues.

Eighteen of the twenty-seven patients (66%) were female. The age ranged from 60 to 91 years with a mean of 81 years. The mean number of medications was 11.9 with a range of 7-24. The patient population included mostly those diagnosed with ischemic heart disease, hypertension, gastro-intestinal conditions such as peptic ulcer disease or gastro-esophageal reflux disease, dyslipidemia, diabetes (type 2) and insomnia.

The most common reasons for initial referral by the home care nurse were for medication adherence assessments and medication education. However, a little more than half the patients were referred for more than one reason, with other reasons for referral being: comprehensive medication regimen review; focused medication regimen review; monitoring for medication-related efficacy &/or toxicity outcomes; assessment of a suspected adverse drug event; and “other”.

The mean number of medication-related issues identified by the pharmacist using the Hepler & Strand model<sup>8</sup> was 3.6 per patient. The types of medication-related issues included:

- Untreated indication (e.g. pain) - second most common finding in this pilot
- Treatment without an indication (e.g. sleep aids no longer necessary)
- Sub-therapeutic dose
- Over dosage
- Adverse drug reaction
- Drug-drug, drug-food, drug-lab interaction
- Failure to receive a drug or non-adherence - most common finding in the pilot project
- Improper drug selection
- Other (this category was added by the project team)

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“This service provides another layer of excellence to the home care model.”

~ EMP Staff

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In effort to resolve the identified medication-related issues, the pharmacist made 117 recommendations for the 27 patients with a mean of 4.3 recommendations made per patient. Of the recommendations 54 were to physicians, 11 to nurses and 52 to the patient-care-giver.

The types of recommendations included:

- Start medication
- Discontinue medication
- Change medication
- Change dose/instructions
- Lab/symptom monitoring
- Patient/caregiver education
- Adherence aid (e.g.: blister package, dosette, calendar), instructions or monitoring
- Other

Forty-four percent of the recommendations were related to altering a specific medication (i.e. starting or discontinuing a medication, changing a medication, or changing a dose or dosing instructions). Lab/symptom monitoring accounted for almost 25% of the recommendations; this is a key component of pharmacists' roles in ensuring both medication efficacy and tolerability. Examples include recommendations to: 1) repeat HbA1C if changes are made to either oral hypoglycemic or insulin therapy, 2) order ferritin, iron, total iron binding capacity, folate, B12 where a patient receiving erythropoietin appears resistant to its effects following an initial response, 3) order serum creatinine, BUN, potassium in patient one week following initiation of an angiotensin converting enzyme inhibitor.

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**“She was very helpful...changed the medications and improved my daily life.”**

~ Patient receiving EMP Care

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Eighty-nine percent of the recommendations were considered significant to very-significant using a scale previously published in the pharmacy literature by Hatoum and colleagues.<sup>9</sup>

### Significance Scale

1. Adverse significance (may lead to adverse outcome)
2. No significance (informational)
3. Somewhat significant
4. Significant (in line with standards of practice)
5. Very significant (potential/existing major organ dysfunction)
6. Extremely significant (life/death situation)

~ Hatoum and colleagues

The clinical significance of the recommendations made by the pharmacist was rated by the project pharmacist and, in order to validate these rankings, an independent pharmacist conducted chart audits on the recommendations made for 20% of the patient participants.

### Findings

The main results of the pilot project are as follows:

- There was a mean of 3.6 medication-related issues and 4.3 recommendations per patient
- Physicians accepted 74.1% of pharmacist recommendations. Only 5.5% of recommendations (i.e. 3 recommendations) were actively rejected by

physicians. The outcome of the remaining 20.4% of recommendations was unknown as the project ended before the outcome could be evaluated.

- 89% of recommendations were rated as either significant or very significant
- Overall patient and nurse satisfaction scores were 9.9 and 9.6, respectively on a scale where 0 was 'not at all satisfied' and 10 was 'completely satisfied'.

The total amount of time that the pharmacist spent on each patient's case was also tracked. This value includes preparation time before the home visit, travel time, the home visit itself, and any post-visit activities linked to caring for the patient, including care plan development, contacting other healthcare professionals, documentation, etc. The average amount of time spent per patient declined significantly from visit one (227 minutes) to visit two (128 minutes). Although there was a further decline at visit three (114 minutes), this decline was not statistically significant. Considerably more time was required for work associated with the first visit after discharge from the hospital, due mostly to the pre-visit chart review and other preparatory work.

The results of this pilot project demonstrate that medication-related issues exist in patients recently discharged from hospital. In this pilot project, recommendations were made to optimize medication regimens for these patients. Finally, both patients and nurses were very satisfied with the pharmacist's services.

## OUTCOMES

Since the completion of the pilot project, the pharmacist position has become permanent as a 0.5 full-time equivalent position. The pharmacist's role has evolved to also include the provision of direct patient care to patients other than those who have recently been hospitalized (e.g. community-dwelling patients, palliative care patients, etc.). The process for referrals to pharmacy services has expanded to include interdisciplinary referrals and referrals directly from physicians; the pharmacist has recently started participating in interdisciplinary palliative care rounds at EMP. The pharmacist also serves as a drug information resource for members of the home care team and provides educational in-services to the team.

### Key Success Factors

- Openness and receptivity of the home care staff to the pharmacy pilot project
- Support from management and colleagues in hospital and community pharmacies
- Effective communication amongst the entire health care team, which is facilitated in New Brunswick by the Electronic Medical Record (EMR).

While the role of the pharmacist within home care is still quite new, the demand and enthusiasm for this service is high. The pharmacist triages the referrals addressing those patients whose clinical condition indicates greatest need. The team also sees the opportunity for an expanded role in palliative care.

## CONCLUSION

There are a number of medication-related issues amongst patients recently discharged from the hospital to the home care setting. And as the pharmacist is important to the hospital team, so is the pharmacist integral to an effective home care program. Pharmacist interventions can optimize medication regimens and have the potential to reduce adverse events and to avert admissions to hospital.

The home care pharmacist serves to facilitate communications to the community pharmacy and hospital pharmacy team and enables effective linkages across the health care system in order to improve the level of medication safety.

In addition, the home care team, clients and their caregivers benefit from the contribution of the pharmacist who provides their expertise to optimize medication therapy, explain medication regimens, administration, storage, side effects and compatibility with other treatments.

For more information on the CHCA's High Impact Practices or other initiatives, contact [www.cdnhomecare.ca](http://www.cdnhomecare.ca)

### The CHCA defines home care

as an array of services, provided in the home and community setting, that encompass health promotion and teaching, curative intervention, end-of-life care, rehabilitation, support and maintenance, social adaptation and integration and support for the informal (family) caregiver.

#### End Notes:

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<sup>2</sup> Forster et al. *Ann Intern Med* 2003 Feb4;138(3):161-7

<sup>3</sup> Healthy Futures: Securing New Brunswick's Health Care System. The Provincial Health Plan 2004-2008.

<sup>4</sup> Rx&D, [http://www.canadapharma.org/Pubs/Knowledge/KIBMback\\_e.html](http://www.canadapharma.org/Pubs/Knowledge/KIBMback_e.html)

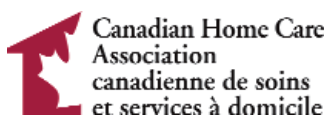
<sup>5</sup> Forster et al. *Ann Intern Med* 2003 Feb4;138(3):161-7

<sup>6</sup> Project participants included – Extra-Mural Program (EMP) – Linda Price, Maura Dalton, Shirley Oliver (Managers), Terry Morrissey (Director, Extra-Mural Program & Public Health), Fonda Kazi (Vice President, Community Health), Dr. Suzanne Hall Losier (Medical Liaison), EMP staff ; Pharmacy Department, South-East Regional Health Authority; Mount Allison University; Medbuy Endowment Fund

<sup>7</sup> Medbuy is a national group purchasing organization, to which the SERHA is a member. Medbuy's Endowment Fund supports research and educational projects. The Medbuy funding supported the development and maintenance of a computerized database for this pilot project and provided funding to communicate the results via presentation at a national pharmacy conference.

<sup>8</sup> Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm* 1990;47: 533-43.

<sup>9</sup> Hatoum HT, Hutchinson RA, Witte KW et al. Evaluation of the contribution of clinical pharmacists: inpatient care and cost reduction. *Drug Intell Clin Pharm* 1988;22: 252-9.)



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