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Canadian Pharmacy ► Research ► Health Policy ► Practice ► Better Health

Pharmacists play an important role in diabetes care and can improve patient outcomes

Diabetes has become an increased burden for many Canadians and society as a whole. Optimizing the use of medications can improve care of patients with diabetes and reduce the economic impact of the disease. The four studies included in this issue explore the role of the pharmacist in the care of patients with diabetes and demonstrate that pharmacists can improve clinical indicators of diabetes.

- Pharmacists can improve clinical outcomes of patients with diabetes
- Enhanced pharmacist care improves cholesterol management of patients with diabetes
- Pharmacists identify drug-related problems in a multidisciplinary diabetes team
- Community pharmacists have a role in diabetes management

Pharmacists can improve clinical outcomes of patients with diabetes

Machado M, Bajcar J, Guzza GC, Einarson TR. Sensitivity of patient outcomes to pharmacist interventions. Part 1: systematic review and meta-analysis in diabetes management. *The Annals of Pharmacotherapy*. 2007; 41(10):1569-82.

Issue: Pharmacists can cooperate with patients and other health professionals in designing, implementing and monitoring therapeutic plans that assist patients with diabetes in making critical behavioural changes. Research has demonstrated that interventions by pharmacists have had a positive impact on patient outcomes. A meta analysis is required to identify which specific patient outcomes are sensitive to pharmacists' interventions.

A solution: This systematic review and analysis is the first to be published regarding pharmacists' interventions in patients with diabetes. A total of 36 articles dealing with diabetes management were included for review. Most of the studies were based in a medical clinic or community phar-

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macy with diabetes education and medication management being the most common pharmacist interventions. Outcomes were classified into four categories based on the clinical relevance and statistical significance of pharmacists' interventions: definitely sensitive, possibly sensitive, possibly not sensitive and definitely not sensitive.

Seven outcomes were classified into one of four sensitivity categories. Hemoglobin A1C value decreases were "definitely sen-

sitive" (both clinically and statistically significant). Systolic blood pressure and fasting plasma glucose were "possibly sensitive" (findings were clinically significant, but due to a small sample no statistical conclusions were drawn). Cholesterol levels, medication adherence, diabetes knowledge and patient quality of life were "possibly not sensitive" (in most cases there was insufficient evidence of a significant impact on patient outcomes). None of the outcome were classified as "definitely not sensitive".

The findings also suggested that pharmacists had a greater impact on patients who were at higher risk, had more complex cases, and may have little other contact with other health professionals.

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Pharmacists can improve clinical outcomes of patients with diabetes (continued)

Implications: Pharmacists' interventions are capable of improving long-term blood glucose control (decreasing A1C values) of diabetic patients in comparison with those patients receiving standard care. However, future research is required to produce more evidence for those outcomes that were categorized as "possibly not sensitive". In addition, research should be conducted to assess the impact of pharmacists' interventions in other diseases such as hypertension, hyperlipidemia and mental illnesses. Pharmacists should target complex patients or those at higher risk as they benefit the most from interventions.

Background or research methods:

International Pharmaceutical Abstracts, MEDLINE, Embase, The Cochrane Central Register of Controlled Trials (3rd Quarter) and Cumulative Index to Nursing & Allied Health Literature were independently searched to retrieve publications involving an intervention delivered by a pharmacist to patients with diabetes. Original research articles published in English, French, German, Portuguese or Spanish were accepted. Article selec-

tion and data extraction was conducted by two independent reviewers and disagreement resolved through consensus. An initial search found 302 articles and 125 relevant articles were read in full. In the final analysis, 36 articles dealing with diabetes management were selected. □

Financial Support: Ontario Ministry of Health and Long-Term Care – Health Care Outcomes

Enhanced pharmacist care improves cholesterol management of patients with diabetes

Simpson SH, Johnson JA, Biggs RS, Tsuyuki RT. Greater effect of enhanced pharmacist care on cholesterol management in patients with diabetes mellitus : a planned subgroup analysis of the study of cardiovascular risk intervention by pharmacists (SCRIP). *Pharmacotherapy*. 2004; 24(3):389-394.

Issue: Patients with diabetes are at greater risk of cardiovascular events than patients without diabetes. Therefore, aggressive cholesterol treatment is recommended in patients with diabetes to help reduce the risk for cardiovascular events. Recent studies have observed that many patients with diabetes do not have adequate cholesterol management and a gap exists between current practice and the recommended best practices. Effective interventions in cholesterol management in patients with diabetes need to be identified and tested.

A solution: Community pharmacists are accessible and ideally placed to proactively identify patients with diabetes who are at risk of cardiovascular events. In this randomized trial, community pharmacists provided patients with an enhanced

care program that included: an interview to identify cardiovascular risk factors; a measurement of total cholesterol level and blood pressure; education regarding heart disease risk factors; recommendation to visit the family physician specifically for risk factor assessment; and five in-person or telephone follow-up visits during the subsequent 4-month period.

Overall, patients receiving enhanced care from their pharmacist showed improvements in cholesterol risk management (i.e., have a cholesterol blood test, or a new or an increase in cholesterol lowering drugs). Patients with diabetes benefited even more (five times more) from enhanced pharmacist care compared to those without diabetes. Patients with diabetes saw a significant reduction in their total cholesterol levels over the 4-month

follow-up period. They also experienced a decrease in blood pressure and cardiovascular risk factors.

Implications: Pharmacists' provision of enhanced care improves the management of patients at high risk for cardiovascular disease, especially in patients with diabetes. Pharmacists are more easily accessible than most other health professionals in the community and are thus ideally placed to identify and follow patients at high risk for cardiovascular events. The incremental cost of an enhanced pharmacist care program is economically feasible for governments, and minimal, especially compared to the costs of the complications of cardiovascular disease. These costs essentially cover the blood test and extra cholesterol lowering drugs.

Studies cited by the authors of this study:

Tan MH, MacLean DR. Epidemiology of diabetes mellitus in Canada. *Clin Invest Med* 1995;18: 240-6.

Wingard DL, Barrett-Connor E, Criqui MH, Suarez L. Clustering of heart disease risk factors in diabetic compared to nondiabetic adults. *Am J Epidemiol* 1983;117:19-26.

Stamler J, Vaccaro O, Neaton JD, Wentworth D. Diabetes, other risk factors and 12-year cardiovascular mortality for men screened in the multiple risk factor intervention trial. *Diabetes Care* 1993;16:434-44.

Background or research methods:

54 community pharmacies in Alberta and Saskatchewan recruited 675 patients, of which 294 had diabetes. Patients were eligible for inclusion if they had existing cardiovascular disease or diabetes with one or more other cardiovascular risk factors. Patients were randomized to either

usual care or enhanced pharmacist care. A primary end point was defined as: a cholesterol blood test as ordered by the family physician, or adding a cholesterol-lowering drug, or increasing the dosage of a cholesterol-lowering drug. Patients were only included once despite reaching multiple end points. Patients receiving enhanced

pharmacist care were evaluated for a reduction in the risk of cardiovascular events. □

Financial Support: University Hospital Foundation, Merck Frosst Canada Ltd. and the Institute for Health Economics

Pharmacists identify drug-related problems in a multidisciplinary diabetes team

Kassam R, Meneilly GS. Role of the pharmacist on a multidisciplinary diabetes team. *Canadian Journal of Diabetes*. 2007; 31(3):215-222.

Issue: In older patients, diabetes can lead to functional decline, impaired balance, falls and hospital admissions. These events decrease older adults' quality of life and increase use of healthcare system resources. While evidence indicates that pharmacists can have a positive impact on diabetes care in a community setting; the benefits of a pharmacist on a geriatric multidisciplinary diabetes team have yet to be evaluated.

A solution: A pharmacist is included in a geriatric multidisciplinary team consisting of a diabetologist-geriatrician, dietitian and a nurse. The team is based out of the Vancouver Hospital diabetes centre and works with patients 70 years of age and older, referred by their family physicians. A social worker is available to support the team.

This study evaluated the interventions made by the team pharmacist during one-on-one patient consultation of 30-45 minutes duration. Patients recommended by

The pharmacist interviewed 138 patients and identified 276 drug-related problems

the multidisciplinary team for pharmacist consultation were those patients taking multiple medications or those observed to have difficulties with medication adherence. Following the pharmacist consultation a plan of action for addressing the drug-related challenges was created in collaboration with the patient and the multidisciplinary team. This plan was then forwarded to the patient's family physician. When necessary, a short follow-up consultation was scheduled between the pharmacist and the patient.

The pharmacist interviewed 138 patients and identified 276 drug-related problems, categorized into eight groups: no indication for therapy, would benefit from additional new therapy, current therapy not achieving outcomes, receiving too low a dose, receiving too high a dose, not taking

therapy as prescribed, risk of adverse effect and risk of drug interaction. The most common drug-related problem identified by the pharmacist was 'would benefit from additional drug therapy' and 'receiving too low a dose'. The pharmacist also intervened to manage undesirable effects of medication to help reduce falls and hypoglycemic episodes. The significance of the pharmacist's interventions was rated by a panel of three judges which included two internists and one pharmacist, experienced in the care of geriatric patients. For over three-quarters of the interventions, the impact was estimated to be moderate to high.

Implications: This study shows that pharmacists can identify drug-related problems to help improve care of older patients with diabetes by reducing the incidence of adverse events such as falls or hypoglycaemic episodes. Further study is required to determine the generalizability of these results.

Background or research methods:

This exploratory study was conducted at the outpatient Vancouver Hospital diabetes care centre over a three-year period (2001-2003). Patients (n=138) included in this study were drawn from

a larger group of patients referred to the diabetes care centre by their family physician. Those included in this study composed a patient group ≥ 70 years of age and considered to be at increased risk of illness due to their advanced age,

their inability to achieve adequate blood glucose control or the presence of other diseases. □

Financial support: The Jack Bell Fund at Vancouver Hospital



diabetes strategy
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The Diabetes Strategy for Pharmacists is helping to direct the future of pharmacist involvement in diabetes patient care.

Watch for the release of the Diabetes Guidelines for Pharmacists, available in early 2009.

(Aussi disponible en français : www.pharmacists.ca/diabete)



For more information on the Diabetes Strategy for Pharmacists, visit us online at www.pharmacists.ca/diabetes or www.pharmacists.ca/diabete



Community pharmacists have a role in diabetes management

Hartnell NR, MacKinnon NJ, Sketris IS, Gass D. The roles of community pharmacists in managing patients with diabetes: perceptions of health care professionals in Nova Scotia. *Canadian Pharmacists Journal*. 2005 136(6):46-53.

Issue: In Nova Scotia, diabetes is responsible for a total economic burden of \$79.4 million. Patients with newly diagnosed diabetes are typically referred to a Diabetes Centre (DC) by their family physician. Some patients with diabetes may wait six to eight months for an appointment at a DC.

A solution: Pharmacists are easily accessible in the community and have an important role to play in diabetes care. They can provide timely education to diabetes patients, helping to mitigate the clinical and economic burden of diabetes care in their communities. What are the perceptions of health care professionals on the role of community pharmacists in the provision of diabetes care to patients?

This study sought to uncover these perceptions by interviewing eight primary health care physicians, six community pharmacists, and four health profession-

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als from the Diabetes Care Centres (nurses or dietitians). Seventeen of the eighteen health care professionals who participated responded positively to the collaborative involvement of community pharmacists in the provision of diabetes care. Data obtained in the interviews were analyzed for common themes.

Education about drug therapy was the role most frequently mentioned by participants (83%). The second most frequent role (67%) was providing information about blood glucose monitors, glucose self-testing and maintaining a healthy lifestyle. Other roles, in order from most frequent to least frequent, included reinforcement of the health

messages of other health care professionals, monitoring of medication and regular testing, providing feedback to physicians and counselling patients on over-the-counter medications.

Implications: This study demonstrates some of the roles that community pharmacists may play in helping patients with diabetes. Pharmacists can help patients with diabetes receive timely and accessible education and information. Potential limitations to this study were: a small sample size, low response rate, and self selection. Further research is required to validate these findings and to determine which community pharmacy-based diabetes management programs are feasible for national implementation. Continued education and research is needed to determine the effectiveness of interprofessional collaboration in providing care to patients with diabetes.

Background or research methods:

A total of 330 primary care physicians, 280 community pharmacists and 13 nurses or dietitians from DCs from the Capital District Health Authority, Halifax, NS were identified as eligible. Physicians for the study were identified from the "Physician Listing" published by the College of Physicians and Surgeons of Nova Scotia; and community pharmacists were identified from a directory of Nova Scotia pharmacies provided by the Pharmacy Association

of Nova Scotia. Health care professionals from the DCs were identified from resources available through the Diabetes Care Program of Nova Scotia. Of these primary health care physicians and community pharmacists, 310 were randomly selected to receive an invitation to participate in the study. All nurses and dietitians employed by the DCs were also invited to participate. Eighteen (n=18) respondents participated in a 20-minute semi-structured telephone interview. Interviews were

conducted over an eight-week period from September to October 2003. The interview data were analyzed for common themes. □

Financial Support: Ingrid Sketris holds a CHSRF/CIHR Chair in Drug Use Management and Policy cosponsored by the Nova Scotia Health Research Foundation. Nicole Hartnell was funded as a Drug Use Management and Policy Research Resident as part of this Chair.

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