Collaborative Research Grant Initiative: Mental Wellness in Seniors and Persons with Disabilities

Seed/Bridge Fund Final Report

Combined Medication Review with Behavioural Assessment Screening to Identify Reversible Adverse Effects and Enhance Independent Living in Community-Dwelling Seniors

March 15, 2012 - Dr. Scott Oddie
EXECUTIVE SUMMARY

Polypharmacy is the use of multiple medications and may contribute to adverse effects like depression, falls, memory loss, poor attention and language, motor vehicle accidents and even death. More than 50% of emergency room visits and 70% of seniors admitted to hospital for hip fractures were directly related to adverse medications. In a recent study that looked at patients who had fallen in care in the past year, 97% were on at least one high risk medication known to be related to falls; the average was three. These adverse effects are likely reversible and preventable but difficult to detect.

A partnership of the Health Research Collaborative (an applied research program between Red Deer College and Alberta Health Services) and the Central Alberta Council on Aging conducted a research project to reduce adverse medication effects in community-dwelling seniors. It aimed to do three things: 1) examine a more effective process of medication review and behavioural assessment in seniors that results in interventions made by pharmacists and physicians to reduce adverse medication effects; 2) increase senior, pharmacist, physician and other care providers’ awareness of the risks associated with polypharmacy; and 3) Reduce health care costs that result from adverse medication effects.

Information and participant referral pamphlets provided to physicians did not result in any referrals to the study. To accommodate, the referral strategy shifted to focus on homecare nurses. Homecare nurses were informed about the project and given information and tools to provide referrals from individuals receiving homecare on five or more medications. Only 15 participant referrals were received. Of these, five assessments could not be completed due to the participants moving into continuing care, excluding them from the study. Eight assessments were completed, with reports being sent out to attending physicians and homecare nurses. Seven of these reports identified at least one potential adverse medication and behavioural deficit. The two remaining referrals encountered scheduling difficulties and eventually did not participate in the study.

Significant referral barriers included not having enough information regarding the project and not being aware of the project outcomes. Several respondents reported identifying clients who fit referral criteria, but whom they did not refer due to time constraints, lack of client interest or lack of information provided directly to other family members who did not support participation. Reports sent to both physicians and homecare nurses indicated potential adverse medication interactions, medication identified as adverse (according to Beers’ Criteria), and medication known to be associated with falls. Follow up interviews to obtain feedback on the reports and determine if medication changes had been made were initiated with eight physicians and homecare nurses. Of these, two nurses indicated they had not yet been able to discuss the report with the physician. One reported no changes. No physicians were available for follow-up discussions of the report.

The limited number of referrals indicate that there are significant barriers to the referral process, practitioner engagement and support for practice change to reduce adverse medication effects.
RESEARCH OVERVIEW

Objective(s)
The objectives of this project were to: 1) examine a more effective process of medication review and behavioural assessment in seniors that results in interventions made by pharmacists and physicians to reduce adverse medication effects; 2) increase senior, pharmacist, physician and other care providers’ awareness of the risks associated with polypharmacy; and ultimately 3) Reduce health care costs that result from adverse medication effects.

Background
Polypharmacy is the use of multiple medications and may contribute to adverse effects like depression, falls, memory loss, poor attention and language, motor vehicle accidents and even death. More than 50% of emergency room visits and 70% of seniors admitted to hospital for hip fractures were directly related to adverse medications. In a recent study that looked at patients who had fallen in care in the past year, 97% were on at least one high risk medication known to be related to falls; the average was three. These adverse effects are likely reversible and preventable but difficult to detect. A partnership of the Health Research Collaborative (an applied research program between Red Deer College and Alberta Health Services) and the Central Alberta Council on Aging conducted a research project to reduce adverse medication effects in community-dwelling seniors.

Approach and Methods
Participants were referred by physicians or homecare nurses who were given referal pamphlets to give to potential participants. Participants were community-dwelling seniors aged 60 and older, administering five or more prescribed medications, had an attending physician, nurse and/or pharmacist to review the behavioural screening and medication review reports, reside within a 200 km radius of Red Deer, and provide signed informed consent.

A structured interview collected the following information: 1) demographics; 2) the name, dosage, and duration of administration of medications; 3) information on the need for assistance with activities of daily living (ADL) and instrumental ADL; 4) the current number and type of diagnosed medical conditions; 5) the occurrence of health status indicators; and 6) quality of life indicators. Standardized cognitive measures included: 1) the Repeatable Battery for the Assessment of Neuropsychological Status, 2) the North American Adult Reading Test, 3) the Benton Controlled Oral Word Association verbal fluency test, 4) the Trail Making Test (a measure of attention and mental flexibility), and 5) the Geriatric Depression Rating Scale. Balance, gait and movement were measured using a combination of the Berg Balance Scale, the Tinetti Assessment Tool (measure of gait and balance), and the Abnormal Involuntary Movement Scale (a measure associated with drug-induced movement disorder). All assessment took approximately 90 minutes.

Following the interview and behavioural assessments, each participant’s prescribed medications were recorded and reviewed. Inclusion criteria used to identify potential adverse medication were: 1) inappropriate prescribed dosage; 2) inappropriate prescribed duration of administration; 3) adverse interactions (determined using GeneMedRx and the CPS, 2009); 4) inappropriate adverse medications independent of condition as determined by the Beers’ Criteria (Fick et al., 2003); and 5) inappropriate adverse medication due to condition as determined by the Beers’ Criteria and the structured interview, respectively. Any medication meeting at least one criterion was identified as potentially adverse and brought to the attention of health practitioners.

Behavioural screening and preliminary medication review reports provided color-coded indicators: Green=Intact, Yellow=Mild Impairment, Orange= Moderate Impairment and Red=Severe Impairment. For movement assessments color coding was Green=Normal, Yellow= Moderate Impairment, Red=Severe Impairment.

Key Findings
Information and participant referral pamphlets provided to physicians did not result in any referrals to the study. To accommodate, the referral strategy shifted to focus on homecare nurses. Homecare
nurses were informed about the project and given information and tools to provide referrals from individuals receiving homecare on five or more medications. Only 15 participant referrals were received. Of these, five assessments could not be completed due to the participants moving into continuing care, excluding them from the study. Eight assessments were completed, with reports being sent out to attending physicians and homecare nurses. Seven of these reports identified at least one potential adverse medication and behavioural deficit. The two remaining referrals encountered scheduling difficulties and eventually did not participate in the study.

The limited number of referrals indicate that there are significant barriers to the referral process and practitioner engagement. To better understand these barriers, a survey was developed and sent to homecare nurses. 70% of respondents indicated that they had provided referrals. Key factors that resulted in referrals included the client’s age, independence level, cognitive capability, number of medications (participants had to be administering at least five medications), and a willingness to participate. Approximately half of the respondents indicated that they had followed up with the participants regarding the study and reported that two had been contacted by the assessment team, one participant withdrew because of the delay they experienced prior to initial contact by the research team, one participant was discharged from homecare, and one referral was accidently deleted and then successfully re-referred.

Significant referral barriers included not having enough information regarding the project and not being aware of the project outcomes. Several respondents reported identifying clients who fit referral criteria, but whom they did not refer due to time constraints, lack of client interest or lack of information provided directly to other family members who did not support participation.

Reports sent to both physicians and homecare nurses indicated potential adverse medication interactions, medication identified as adverse (according to Beers’ Criteria), and medication known to be associated with falls. Follow up interviews to obtain feedback on the reports and determine if medication changes had been made were initiated with eight physicians and homecare nurses. Of these, two nurses indicated they have not yet been able to discuss the report with the physician. One reported no changes. No physicians were available for follow-up discussions of the report.

Conclusions
The limited number of referrals for participants in this adverse medication reduction initiative indicate that there are significant barriers to the referral process, practitioner engagement and support for practice changes to reduce adverse medication effects.

Implications for Policy or Practice
Practitioners need to be more engaged in change initiatives and require more supports and change management procedures to be implemented with practice change initiatives.

Directions for Further Research
Adverse medication effects result in deteriorating health outcomes and significant preventable costs to the health system. More research needs to examine and address the issue. Practice change supports to reduce adverse medication effects need to be established.

Knowledge Dissemination and Translation Activities
Results were presented at our RDC’s annual Student Research Symposium and the U of C Undergraduate Research Conference.
## Principal Applicant (Team Leader)

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<tr>
<th>Name</th>
<th>Position Title</th>
<th>Topics of interest</th>
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<tbody>
<tr>
<td>Scott Oddie</td>
<td>Rural Health Research Chair</td>
<td>Health, Primary Care, Mental Health, Adverse Medications</td>
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## Project Partners (Team Members)

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<tr>
<th>Name</th>
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<tr>
<td>Dr. Kim Goddard, Ph.D.</td>
<td>Chartered Clinical Psychologist, Regional Mental Health Program</td>
<td>Dr. Goddard is a co-investigator and supervises clinical assessment training, performs behavioural assessment review, is the lead chartered psychologist for the project. Dr. Goddard performs much of the behavioural assessment data standardization, analysis and interpretation.</td>
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<td>Dr. Peter Wass</td>
<td>Registered Clinical Neuropsychologist and Associate Professor, Canadian University College</td>
<td>Dr. Wass serves as a research team advisor with expertise in clinical assessment and research expertise in behavioural neuropsychology and behavioural neuropharmacology. Dr. Wass will assist in the development, review and evaluation of the behavioural assessment and medication review report.</td>
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<td>Dr. Lawrence Olfert, M.D.</td>
<td>Rural Physician and Alberta Medical Association Stenting Committee Member</td>
<td>Dr. Olfert serves as a research team advisor and provides expertise in physician engagement planning, physician networks, rural practice and knowledge transfer to physician practice strategies; provides feedback on the behavioural assessment and preliminary medication review reports; data interpretation.</td>
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<td>Dr. Renette Bertholet, Pharm.D.</td>
<td>Pharmacist Consultant</td>
<td>Dr. Bertholet provides medication reviews for the Red Deer PCN and serves as a project advisor to provide expertise and perspectives regarding medication review, pharmacist engagement, advantages to interprofessional practice and knowledge transfer to practice strategies.</td>
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<td>Ed Ertl, B.Sc. Pharm.</td>
<td>AHS Pharmacist, RDRHC</td>
<td>Ed performs medication review for the RDRHC and serves as a project advisor to provide expertise and perspectives regarding medication review, pharmacist engagement, advantages to interprofessional practice, pharmacist engagement and knowledge transfer to practice strategies. Ed Ertl has recently retired but stays involved.</td>
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<td>Colin Oddie, B.Sc. Pharm.</td>
<td>Retired Pharmacist and Hospital Administrator</td>
<td>Colin serves as a project advisor to provide expertise regarding medication review, practice and policy change management, and the senior’s perspective of behavioural assessment and medication health literacy. Colin has been involved since October, 2009.</td>
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<td>Dawn Parent</td>
<td>Seniors Advisory Council Member</td>
<td>Mrs. Parent became a member of the Seniors Advisory Council for Alberta in 2005 and serves to enhance policy and practice decisions regarding project outcomes. Dawn also will assist in supporting knowledge generation to transfer in community health practice and awareness initiatives for community-dwelling seniors.</td>
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<td>Shirley Thomas, M.Sc. Health Adm., B.Sc. Nursing</td>
<td>Retired Nurse and Clinical Instructor; Central Alberta Council on Aging Member</td>
<td>Shirley serves as a project advisor and has an extensive background in clinical practice and health administration. Shirley also Chairs the Central Alberta Council on Aging Health Committee and serves to enhance policy and practice decisions regarding project outcomes; assist in supporting knowledge generation to transfer in community health practice and awareness initiatives for community-dwelling seniors.</td>
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PUBLICATIONS AND PRESENTATIONS


ABOUT THE ALBERTA ADDICTION AND MENTAL HEALTH RESEARCH PARTNERSHIP PROGRAM

The Alberta Addiction and Mental Health Research Partnership Program is comprised of a broad-based multi-sectoral group, representing service providers, academic researchers, policy-makers and consumer groups, working together to improve the coordination and implementation of practice-based addiction and mental health research in Alberta.

The mission of the Research Partnership Program is to improve addiction and mental health outcomes for Albertans along identified research priority themes, by generating evidence and expediting its transfer into addiction and mental health promotion, prevention of mental illness, and innovative service delivery.

The Research Partnership Program sets out to increase Alberta’s excellence and output of addiction and mental health research findings, and to better translate of these findings into practice improvements.