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# ABSTRACTS AND POSTERS

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CANADIAN  
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# Can pharmacists influence SMBG practices in a community pharmacy?

*Kerry Mansell, BSP, PharmD, Katherine Jiricka, BA, David Blackburn, BSP, PharmD, FCSHP, Jeff Taylor, BSP, PhD*

**OBJECTIVE:** To determine if pharmacists can influence non-insulin-dependent type 2 diabetes (T2DM) patients to reduce self-monitoring of blood glucose (SMBG) testing frequency according to recent Canadian Agency for Drugs and Technologies in Health (CADTH) recommendations.

**METHODS:** T2DM patients were identified through routine encounters and computer-generated medication profiles and recruited from a single rural community pharmacy. HbA1C was measured via the Bayer A1CNow+ and eligible participants received education on SMBG. Participants were provided study supplies and a study calendar to record SMBG activity. During week 1 (run-in phase), participants performed SMBG as per normal. During weeks 2 through 4, participants performed SMBG on their own accord, based upon the education they received at enrollment. SMBG was recorded, unused strips were returned at study end and participants completed a questionnaire.

**RESULTS:** Among 19 patients who provided informed consent, average weekly strip count decreased in week 2 ( $n = 141$ ), week 3 ( $n = 106$ ) and week 4 ( $n = 109$ ) compared to baseline (228 in week 1) ( $p$  for trend = 0.007). Overall, patients used an average of 5.8 fewer strips per week during weeks 2 through 4 compared to baseline (12 versus 6.2 strips/week;  $p < 0.001$ ). Self-recorded strip use was significantly correlated with physical counts ( $r = 0.72$ ;  $p = 0.001$ ) and did not influence results when interchanged. A 3-month follow-up phone interview indicated that 12/19 (63%) participants continue to test as per the study, whereas 6/19 (32%) reverted back to original SMBG practices.

**DISCUSSION:** Participants decreased SMBG by nearly 50% on average upon receiving CADTH recommendations. This suggests that pharmacists, during a short 10-minute interaction with T2DM patients, have the ability to impact drug utilization.



# Perceptions of family doctors toward pharmacists performing medication assessments

*Julia Bareham, BSc, BSP, Derek Jorgenson, BSP, PharmD, FCSHP*

**BACKGROUND:** High rates of preventable medication-related adverse events are well documented in primary care. Pharmacists can improve medication therapy by providing comprehensive medication management (CMM). Several North American studies have shown that CMM leads to the resolution of a significant number of drug therapy problems. Unfortunately, very few pharmacists currently offer CMM in North America. One hypothesis for the low uptake is that physicians are not supportive of pharmacist-delivered CMM.

**OBJECTIVE:** To determine the extent to which physicians are supportive of pharmacist-delivered CMM.

**METHODS:** A self-administered, 12-item postal survey of 10 close-ended and 2 open-ended questions was sent to 225 practising family physicians in Saskatoon. Physicians with tenure track appointments in the College of Medicine at the University of Saskatchewan were excluded. Results were entered into SPSS statistics program and analyzed using descriptive statistics.

**RESULTS:** The response rate was 49.3%. Ninety percent of respondents reported that pharmacist-delivered CMM would be valuable and 74.5% reported that they would refer their patients. Over 2/3 of respondents could think of 1 or more patients they would refer immediately; however, almost 1/3 required some guidance regarding which patients to refer. Respondents were most likely to refer patients from the following groups: >65 years of age,  $\geq 5$  medications,  $\geq 1$  chronic medical condition. Data analysis of the 2 open-ended questions is in progress.

**DISCUSSION:** Family physicians value pharmacist-delivered CMM and are willing to refer patients to the service. Despite the fact that many physicians have already identified patients they might refer, it appears that many will require education regarding which patients will benefit from CMM.

# Medication safety implications of quality improvement programs in community pharmacy

*Todd A. Boyle, PhD, Neil MacKinnon, PhD, Certina Ho, RPh, BScPhm, MSt, MEd, Thomas Mahaffey, PhD, Jeffrey Taylor*

**OBJECTIVE:** Standardized continuous quality improvement (CQI) programs enable medication errors to be shared throughout the province or country, including their sources and outcomes. Because such CQI programs are new within community pharmacies, little is known about how they impact medication safety. As a result, this research identifies key aspects of medication safety that change as a result of implementing a standardized CQI program.

**METHODS:** In April 2010, 53 community pharmacies in Nova Scotia adopted the SafetyNET-Rx standardized CQI program ([www.safetynetrx.ca](http://www.safetynetrx.ca)). The Institute for Safe Medication Practices (ISMP) Canada's Medication Safety Self-Assessment (MSSA) survey ([www.ismp-canada.org/amssa/index.htm](http://www.ismp-canada.org/amssa/index.htm)) was administered to each pharmacy before and 1 year after their use of the SafetyNET-Rx program. The Wilcoxon signed-rank test was used to assess where changes occurred.

**RESULTS:** Significant improvements occurred with quality processes and risk management (effect size = 0.49), staff competence and education (effect size = 0.45) and communication of drug orders and other information (effect size = 0.42). Patient education, environment and the use of devices did not show statistically significant changes.

**DISCUSSION:** As CQI programs are designed to share learning from medication errors, it is reassuring to see that the largest improvements are related to quality processes, risk management, staff competence and education. A lack of improvement in environmental factors and the use of devices may imply that such changes may take more than 1 year to achieve; in any case, they were being performed well prior to implementing SafetyNET-Rx. Patient education is primarily done by means of patient counselling and this element was not intentionally addressed by the current version of SafetyNET-Rx.

# Increasing medication adherence with the PatientConnect adherence pharmacy program

*Ruth Ackerman, BScPhm, MBA, RPh, Kurt Almquist, BSc(H), Trish Rawn, BScPhm, PharmD, RPh, Kathy Tam, BScPhm, RPh, Daniel Kim, BScPhM, RPh, Paul Kostoff, BSoc, MBA*

**OBJECTIVE:** To assess the impact of pharmacy-level behaviour change intervention on 6-month medication adherence after patients start chronic pharmacotherapy.

**METHODS:** Two pharmacy chains implemented 1-year programs where pharmacies had novel software integrated into their management systems, prompting therapy-targeted adherence message printouts at each prescription fill. Sequential messages for each subsequent refill followed a specific behaviour change and patient engagement model. New pharmacotherapy initiator adherence rates were compared in 8 chronic medication classes for the intervention year and the year prior (no intervention) in the same stores. Medication classes included statins, antidepressants, oral hypoglycemic agents, beta-blockers, bisphosphonates, calcium channel blockers, ACE inhibitors and angiotensin-receptor blockers. Additionally, 1 pharmacy chain included control stores over the same time frame. The adherence metric used was proportion of days covered (PDC). Comparison of intervention and control groups employed nonparametric statistical analyses (Rank Sum Test) for new initiators with  $\geq 6$  months of observation.

**RESULTS:** Both pharmacy chains showed significant 6-month absolute increases in medication adherence for new pharmacotherapy initiators receiving the new intervention model, 9.4% and 10.4%, respectively (relative increases of 15.6% and 17.7%):

- Chain #1: 69.5% ( $N_{\text{Intervention}} = 2115$ ); 60.1% ( $N_{\text{Control}} = 1148$ ),  $p < 0.01$

- Chain #2: 69.2% ( $N_{\text{Intervention}} = 1689$ ); 58.8% ( $N_{\text{Control}} = 598$ ),  $p < 0.01$

In contrast, pharmacotherapy initiators in Chain #2 control stores receiving no intervention had a 1% decrease in medication adherence over the same time frame:

- Control: 57.0% ( $N_{\text{ControlYear2}} = 1840$ ); 58.0% ( $N_{\text{ControlYear1}} = 1664$ ),  $p > 0.05$

**DISCUSSION:** The program's success in increasing medication adherence in new chronic pharmacotherapy initiators from 2 community pharmacy chains demonstrates the program transferability of this model. Potential benefits for improving patient outcomes and increasing pharmacy profitability will be discussed.



# “Best practice” and the value of pharmacy in medication reconciliation

*Shawn Bugden, BSc(Pharm), MSc, PharmD, Kyle MacNair, BSc(Pharm), ACPR*

- OBJECTIVE:** To assess the quality of 2 approaches to medication reconciliation to allow an evidence-informed decision of best practice.
- METHODS:** An online system was used to collect data on a pharmacist-driven medication reconciliation process over a 1-year period in the Regional Health Authority of Central Manitoba. Using this data as a historical control, we examined the coverage and quality of medication reconciliation with a forced function medication reconciliation admission process performed by nurses/physicians.
- RESULTS:** In the pharmacist-driven medication reconciliation, the pharmacist identified unintentional discrepancies in 63% of admission orders and 10% of these had the potential to cause severe harm. Medication reconciliation was performed on 10% to 70% of admissions. Forced function medication reconciliation dramatically improved the coverage of medication reconciliation to 70%–100% of admissions. Quality assessment of this process revealed that 43% of these admissions had failed to identify unintentional medication discrepancies.
- DISCUSSION:** There has been considerable debate about the appropriate level of pharmacy involvement in medication reconciliation. Our data suggest that pharmacist-driven medication reconciliation may not be able to provide adequate admission coverage without considerable investment in pharmacy human resources. The forced function medication reconciliation on admission process, while providing a high level of coverage, fails to fully identify and correct all of the unintentional discrepancies. This data can be used as a guide to suggest the best practice solution. With current resources, a matrix approach that provides a high level of coverage for all admissions, with a pharmacist-based quality control system implemented for high-risk patients, is likely to produce the best overall results.

# The role of community pharmacists in health promotion and prevention

*Marie-Claude Laliberté, Nicole Damestoy, MD, MSc, FRCPC, Sylvie Perreault, BPharm, PhD, Lyne Lalonde, BPharm, PhD*

**OBJECTIVE:** To explore the perceptions of community pharmacists in urban and semi-urban areas regarding their ideal and actual levels of involvement in providing health-promotion and prevention services and the barriers that limit their involvement.

**METHODS:** In a cross-sectional study, a questionnaire was mailed to a random sample of 1250 pharmacists practising in Montreal (Québec, Canada) and surrounding areas. Mailings were done using a modified version of Dillman's tailored design method. The questionnaire included 28 multiple-choice or open-ended questions (in 11 pages plus a cover letter). Results were reported using means, with standard deviations for continuous variables and proportions for discrete variables.

**RESULTS:** A total of 571 (45.7%) eligible community pharmacists completed and returned the questionnaire. Most believed they should be very involved in health promotion and prevention, particularly in smoking cessation (84%); screening for hypertension (82%), dyslipidemia (57%) and diabetes (76%); and sexual health (62% to 89%). However, fewer respondents reported actually being very involved in providing such services (6%, 45%, 7%, 35% and 19%, respectively). The main barriers to the provision of these services in current practice were lack of time (86%), coordination with other health care professionals (61%), staff or resources (57%), financial compensation (51%) and clinical tools (46%).

**DISCUSSION:** Although community pharmacists think they should play a significant role in health promotion and prevention, they recognize a wide gap between their ideal and actual levels of involvement. The efficient integration of primary care pharmacists and pharmacies into public health cannot be envisioned without addressing important organizational barriers.

# Screening older adults for pneumococcal vaccination in community pharmacies

*Christine Hughes, BScPharm, PharmD, FCSHP, Cheryl Sadowski, BScPharm, PharmD*

- OBJECTIVE:** Pneumococcal infections can lead to significant morbidity and mortality in older adults. The primary objective of this study was to determine pneumococcal vaccination rates in community-based older adults ( $\geq 65$  years old) and identify factors associated with vaccination. The secondary objective was to determine vaccination rates for influenza and herpes zoster.
- METHODS:** This study utilized a cross-sectional design using a convenience sample. Senior pharmacy students on community pharmacy clerkship rotations across Alberta recruited ambulatory older adults in 2010/2011. A questionnaire was administered by the student that included patient demographics, past medical history and vaccination status. Results were analyzed descriptively and using multivariate logistic regression.
- RESULTS:** 443 participants were enrolled. The mean age (SD) of participants was 76 (8.7) years; 60% were female and 26% lived in a rural setting. Twenty-eight percent had a history of type 2 diabetes and 9% had a lung condition. Fifty-six percent had received the pneumococcal vaccine; female sex and the history of lung condition were the only factors significantly associated with increased likelihood of receiving a pneumococcal vaccination in multivariate analysis. Seventy-eight percent of participants had received an influenza vaccine in the previous year, while 7% reported receiving the herpes zoster vaccine.
- DISCUSSION:** The pneumococcal vaccine appears to be underused in community-based older adults and is well below the national target rate of 80%. A low percentage of older adults similarly report receiving the herpes zoster vaccine, however, influenza vaccination is close to target rates. Pharmacists may be well placed to address this care gap and future research will evaluate the most effective strategies to meet vaccination targets involving pharmacists.



# Opportunities for optimizing the role of pharmacists in family planning

*Judith Soon, BSc(Pharm), RPh, ACPR, MSc, PhD, FCSHP, Wendy V. Norman, MD, MHSc, Sheila Dunn, MD, MSc, Jennifer Hulme, MD, MPH, Edith Guilbert, MD, MSc*

- OBJECTIVE:** Unintended pregnancy and limited access to contraception in Canada disproportionately affects marginalized populations. To inform a national family planning research agenda, health care providers were surveyed about contraception access and quality of care.
- METHODS:** A bilingual online self-administered survey was based upon the family planning frameworks of Bertrand (to evaluate access) and Bruce (to assess quality of care) and piloted to establish content validity and readability. It was distributed using snowball sampling through key English and French organizations and health care providers, with reminders at 2 and 6 weeks.
- RESULTS:** Health care providers (150 English and 56 French) from all provinces and 1 territory completed the survey. Respondents identified women of low socioeconomic status, youth, new immigrants and those without health insurance as a demographic at high risk of experiencing barriers to accessing contraceptives, citing the high cost of contraceptives (e.g., IUDs), lack of knowledge (e.g., effectiveness of contraceptives), psychosocial (e.g., lack of cultural sensitivity of providers), health system barriers (e.g., inability to access a primary care professional prescribing contraception) and distance (e.g., services too far from home) as key factors. Women most affected by lower quality care were of low socioeconomic status, youth, Aboriginals, the mentally ill or those living in rural areas. Fewer French respondents reported inequities in access and quality.
- DISCUSSION:** Health care providers identified limitations in access to and quality of contraceptive care among marginalized populations. As trusted and knowledgeable health care providers and with increasingly legislated practice-related policy changes, pharmacists are well positioned to assume a greater role in optimizing the consistency of accessible, high-quality family planning services across Canada.

# Weight management services in community pharmacy: A Scottish view

*Anita Weidmann, MRPharmS, PhD, Scott Cunningham, PhD, MRPharmS, Denise Hansford, PhD, MRPharmS, Giovanna Bermano, PhD, Derek Stewart, MSc, PhD*

**OBJECTIVE:** To describe the views of the Scottish general public on the provision of weight management services via community pharmacies.

**METHODS:** A cross-sectional postal questionnaire survey was sent to 6000 randomly selected members of the Scottish general public aged 18 years and over.

**RESULTS:** Questionnaires were returned by 20.6% ( $n = 1236$ ) of recipients. Over half (60.1%;  $n = 751$ ) agreed or strongly agreed that they had easy access to pharmacy services in general and around 1/3 (35%;  $n = 438$ ) agreed that it is more convenient to obtain weight management advice from a pharmacist than it is to make an appointment with a general practitioner. Most respondents, however, lacked awareness of the types of health services available through community pharmacies (13.2%;  $n = 162$ ) and would not feel comfortable speaking to a pharmacist or medicines counter assistant about weight-related issues (25%;  $n = 320$ ). Concerns over privacy (47.3%;  $n = 592$ ) and the perceived lack of pharmacists' specialist knowledge (open comments) were identified as potential barriers to service uptake by the general public.

**DISCUSSION:** Overall, respondents appear to be receptive to the idea of accessing weight management services through community pharmacies but a perceived lack of privacy, poor knowledge of pharmacists' skill level and of public health services available to them may explain the reluctance in the uptake of such services to date. The general public's views expressed in this study may help to shape future community pharmacy-led weight management service provision nationally and internationally.





# Exploring pharmacists' adoption of prescribing in Alberta

*Lisa M. Guirguis, BScPharm, MSc, PhD, Mark Makowsky, BSP, PharmD, ACPR, Christine Hughes, BScPharm, PharmD, ACPR, FCSHP, Cheryl Sadowski, BScPharm, PharmD, Neşe Yüksel, BScPharm, PharmD, FCSHP, NCMP*

- OBJECTIVE:** In 2007, Alberta became the first North American jurisdiction to grant pharmacists prescribing privileges. Our objective was to explore how pharmacists have adopted prescribing in practice 3 years after this legislation was implemented.
- METHODS:** We invited pharmacists to participate in semi-structured telephone interviews to discuss their prescribing practices and explore the facilitators and barriers to implementation. Pharmacists working in community, hospital, primary care networks or other settings were selected using a mix of random and purposive sampling. Two investigators analyzed each transcript using an Interpretive Description approach to identify themes. The analysis was grounded using the Diffusion of Innovation theory.
- RESULTS:** Thirty-eight participants (14 with additional prescribing authorization) agreed to be interviewed. Twenty-nine participants (76%) reported prescribing at least weekly. Overall, pharmacists felt that prescribing made care more convenient for patients and physicians. Community pharmacists valued the ability to issue a prescription for continuity of care but viewed this as a legitimization of previous practice (i.e., “legalized loaning”) and expressed concerns over liability when prescribing “riskier” medications. “Innovation System Fit” was a prominent theme, whereby the site’s model of practice strongly influenced the adoption of prescribing. Across all practice settings, pharmacists stated that “relationships with physicians” impacted prescribing behaviors and the decision to apply for additional prescribing authorization.
- DISCUSSION:** Our data suggest that the main impact of pharmacist prescribing to date has been to maintain continuity of care. And while there are some cases where core patient care practices have been altered, for the most part this has not been the case.

# The effect of a video-based education program in 539 patients with heart failure

Ross T. Tsuyuki, BSc(Pharm), PharmD, MSc, FCSHP, FACC, Evan Lockwood, MD, FRCP(C), Scot Simpson, BSP, PharmD, MSc, Miriam Fradette, BSc(Pharm), Marcelo Shibata, MD, Kari Olson, BSc(Pharm), PharmD

**OBJECTIVE:** Acute precipitants of heart failure (HF) often relate to poor self-care and knowledge about the condition. Intensive education and support programs are associated with improved outcomes, but are very resource intensive. Our objective was to develop a practical, video-based educational program and evaluate its impact on clinical events in patients with HF.

**METHODS:** Patients with HF were approached for inclusion in the randomized control trial if they were hospitalized, seen in the emergency department (ED) or in an outpatient clinic (with a HF hospitalization in the past 6 months). The COPE educational program consisted of a 20-minute video, supplementary booklet and 3 bimonthly newsletters focusing on 3 previously identified key areas of knowledge deficiency: salt and fluid restriction, daily weights and medications. Patients randomized to the intervention group watched the video at least once and were encouraged to review it at home, along with the booklet/newsletters and discuss questions with their physicians. Patients in the usual care group received the booklet only and were encouraged to speak with their physicians. All patients were contacted by telephone at 6 months to determine clinical events (hospitalizations and ED visits). The primary outcome was the difference in hospitalizations or ED visits between groups. Secondary outcomes included all-cause and HF-related hospitalizations and in-hospital days.

**RESULTS:** We recruited 539 patients from 22 centres (11 were pharmacist-led) in Canada and the US. Baseline characteristics were similar in both groups: 64% males, mean age 66 ( $\pm$  13) years, mean ejection fraction 31% ( $\pm$  13.5), 65% NYHA III/IV, 44% had ischemic etiology, 38% were newly diagnosed with HF and 35% had HF for less than 1 year, 77% had high school/post-secondary education and 36% resided at home with support.

Outcomes	Intervention (n = 270)	Usual care (n = 269)	p-value
CV hospitalization or ED visit	57 (21%)	61 (23%)	0.66
HF-related hospitalization	22 (8%)	22 (8%)	0.99
All-cause hospitalization	50 (19%)	56 (21%)	0.50
CV hospitalization or death	53 (20%)	71 (26%)	0.06
Death	18 (7%)	33 (12%)	0.03

**DISCUSSION:** Among this high-risk HF population, education about self-care behaviours did not improve clinical outcomes. Perhaps the “dose” of our intervention was too low or the knowledge-behavioural change paradigm requires further study. Mortality was lower in the intervention group, although the numbers were small.



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# Pharmacist surveillance for safe drug use in pregnancy and lactation

*Carlo Marra, BSc(Pharm), PharmD, PhD, Larry Lynd, BSP, PhD, Jamie Thomas, BSc, Ema Ferreira, BSc(Pharm), PharmD, Peter von Dadelszen, MBChB, FRCP(C)*

## BACKGROUND

**AND OBJECTIVE:** Hypertensive disorders of pregnancy (HDP) affect 7% to 9% of pregnancies and are associated with serious complications. However, there is no consensus on when to initiate treatment, the target blood pressure in non-severe cases or the relative risks and benefits of antihypertensive agents in pregnancy. The objective of this study, conducted as part of Canada's Drug Safety and Effectiveness Network, was to assess the feasibility of community pharmacist identification and monitoring of HDP treatment.

## METHODS:

In this feasibility trial, community pharmacists recruited pregnant and breastfeeding women in their pharmacies and provided them with enhanced care that included monitoring the appropriateness of antihypertensive prescriptions; surveillance of blood pressure and adverse drug reactions; as well as advice about over-the-counter drugs, natural medicines and lifestyle choices. Pharmacists followed up with their patients over 6 months and maternal drug histories were linked with the BC Perinatal Database.

## RESULTS:

Pharmacists are well-suited to undertake focused, active drug surveillance. A sample of 67 pregnant and breastfeeding patients across British Columbia were recruited in 54 pharmacies. The sample was self-selected towards patients taking prescriptions, especially antihypertensives (15 out of 67). Further, pharmacists identified at least 2 cases of previously unidentified hypertension and were positioned to prevent negative patient outcomes.

## DISCUSSION:

The results of this feasibility study show the value of pharmacist-based drug surveillance strategies and warrant further expansion of antihypertensive surveillance for pregnant and breastfeeding women.



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# Pharmacists and family doctors working together to prevent heart disease

*Erin Yakiwchuk, BSP, ACPR, MSc, David Blackburn, BSP, PharmD, Derek Jorgenson, BSP, PharmD, FCSHP, Tessa Laubsher, MBChB, CCFP, FCFP, Kerry Mansell, BSP, PharmD*

**OBJECTIVE:** Published cardiovascular (CV) risk reduction interventions often report success on selected patients providing informed consent. We aimed to study the effects of an intervention that was applied systematically in a real-world primary care setting.

**METHODS:** A CV risk reduction collaboration was developed with 4 family physicians practising in a medical clinic in Saskatoon, Saskatchewan. The pharmacist screened all consecutive adult patients of these physicians prior to each appointment. Patients' CV risk status and pharmacist recommendations to facilitate CV target achievement were communicated to the physician at the time of their appointment. The physician then had the option of referring the patient back to the pharmacist for ongoing monitoring and follow-up.

**RESULTS:** The pharmacist screened 566 consecutive patients for uncontrolled CV risk factors over the 9-month study period. Of those, 1/3 ( $n = 186$ ) were identified as moderate or high CV risk with  $\geq 1$  uncontrolled risk factor. Among patients who were referred back to the pharmacist for follow-up, 65.5% (74/113) achieved a 50% improvement in at least 1 risk factor in the intent-to-treat analysis. Statistically significant reductions were observed for systolic blood pressure, LDL cholesterol and the total cholesterol to HDL ratio over the study period. In patients started on new medications, there was a high rate of early persistence (36/41; 87.8%) with therapy.

**DISCUSSION:** In our study, systematic screening of all patients attending a family medicine clinic identified uncontrolled CV risk factors in almost 1/3 of adult patients. Furthermore, subsequent pharmacist intervention appeared to facilitate CV risk reduction success in a real world setting.



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EVIDENCE IS  
THE BEST MEDICINE  
THE PROOF IS IN THE OUTCOMES

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# Integrating pharmacists onto primary health care teams: Barriers and facilitators

*Derek Jorgenson, BSP, PharmD, FCSHP, Tessa Laubscher MD, CCFP, FCFP, Barry Lyons, BSP*

**OBJECTIVE:** To document the barriers and facilitators experienced by pharmacists who integrated onto existing multidisciplinary primary health care (PHC) teams across Saskatchewan. The goal was to use the findings to assist future pharmacists planning team integration.

**METHODS:** This qualitative study used one-on-one interviews with pharmacists who integrated onto any of the 23 existing PHC teams in Saskatchewan from 2008 to 2010 and the teams' nurse practitioners/physicians. Interviews continued until data saturation was observed. Thematic analysis of interview transcripts was utilized to explore the barriers and facilitators experienced during integration. Transcripts were independently analyzed by researchers using a combination of deductive and inductive approaches. Researchers met regularly and used an iterative, grounded theory approach to identify common themes. Codes were entered into N-Vivo qualitative data analysis software to confirm themes.

**RESULTS:** Fourteen pharmacists and 11 nurse practitioners/physicians were interviewed. Data saturation was observed in both groups. Themes identified as integration barriers include lack of a detailed pharmacist job description; lack of permanent pharmacist funding; limited pharmacist attendance in the clinic; lack of formal pharmacist orientation and itinerant non-pharmacist staff. Facilitators to integration include assertive pharmacists and confident personalities; high visibility of the pharmacist in the clinic; a previous relationship between the pharmacist and the team; pharmacists with a mentor/peer network and pharmacists who developed a job description that met the specific needs of the team.

**DISCUSSION:** Several barriers and facilitators were identified. This information will be useful to future pharmacists who plan to integrate onto existing multidisciplinary PHC teams.





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# Pharmacist intervention for glycemic control in the community (the RxING study)

*Yazid N. Al Hamarneh, BSc(Pharm), PhD, CDM, Theresa Charrois, BSc(Pharm), MSc, Richard Lewanczuk, MD, PhD, Ross Tsuyuki, PharmD, MSc*

**OBJECTIVE:** To determine the effect of a community pharmacist prescribing intervention on glycemic control in patients with poorly controlled type 2 diabetes.

**METHODS:** This pragmatic, before-and-after designed study involves patients from 10 community pharmacies in Alberta with type 2 diabetes receiving oral hypoglycemic medications and with HbA1c of 7.5% to 11%. Pharmacists systematically identify potential candidates by inviting patients with type 2 diabetes to test their HbA1c using validated point of care technology (DCA Vantage). Pharmacists prescribe 10 units of insulin glargine at bedtime, adjusted by increments of 1 unit daily to achieve a morning fasting glucose of  $\leq 5.5$  mmol/L. The patients are followed at 2, 4, 8, 14, 20 and 26 weeks. The primary outcome is the change in HbA1c from baseline to week 26.

**RESULTS:** We screened 303 patients, of whom 84 were eligible. Of these, 73 (87%) were enrolled in the study; all 11 patients who did not consent did so because of refusal to use insulin. The average patient age is 64 years (SD 10.68), 53% are male, 87% have BMI  $>25$  kg/cm<sup>2</sup> and 79% have elevated waist circumference. Average diabetes duration is 10.14 years (SD 7.11) and the most widely prescribed oral medication is metformin (86%). Average HbA1c is 8.86% (SD 0.94) and average fasting blood glucose is 10.98 mmol/L (SD 4.25).

**DISCUSSION:** This ongoing study will provide evidence for pharmacists' ability to improve glycemic control and improve access to care. Recruitment of the target of 100 patients was expected by March 2012, with the results available by October 2012.

# Perspectives of pharmacy students during a time of significant change

*Kenny Chan, Bell Ho, HBSc, Marie Rocchi, BScPhm, MDEd*

- OBJECTIVE:** The impact of drug system reform in Ontario on pharmacy students has not been closely documented. Building on prior work by the Blueprint for Pharmacy (MacKinnon and CAPSI, 2008), this research qualifies and quantifies University of Toronto students' perceptions on the state of pharmacy.
- METHODS:** Students for Optimizing and Advocating Pharmacy Endeavours (SOAPE) hosted a Blueprint for Pharmacy workshop. Student opinion was gauged using a multiple-choice survey and small discussion groups, and 169 students from all 4 years of pharmacy participated.
- RESULTS:** On the outlook of their future as pharmacists, students answered 3.12 (mean) on a scale of 1 (very bleak) to 5 (very encouraging). First-year students answered 3.54 (mean), while upper-year students answered between 2.93 and 2.71 (mean). Regarding their perception of the public's image of pharmacists, means of 2.97 and 2.79 were obtained for first- and second-year students and was 2.83 and 2.29 for third- and fourth-years respectively. Regarding pharmacy practice areas needing the most improvement, students chose scope of practice, compensation models and the public's image of pharmacists as the top 3 priorities.
- DISCUSSION:** This study presents unique insight into students' perceptions of pharmacy following recent drug system reform in Ontario. Student impressions about their future prospects within the profession and the public's perception of pharmacists appeared to decline as cohorts progressed through their studies. The trend may be associated with those most affected by 2009 drug system reforms; additional research is in motion.

# Pharmacy students' attitudes about pharmacist prescribing

*Christine Hughes, BscPharm, PharmD, FCSHP, Meagen Rosenthal, MA, Beverly Ang, Theresa Charrois, BscPharm, Msc*

- OBJECTIVE:** While there is published literature describing attitudes towards pharmacist prescribing from the perspective of pharmacists, physicians and nurses, there is a paucity of data from pharmacy students. The objective of this research is to understand the perceptions of pharmacy students on pharmacist prescribing.
- METHODS:** A cohort of consenting fourth-year pharmacy students from the University of Alberta were recruited to participate in semi-structured, face-to-face focus group interviews that were audio recorded and transcribed. A qualitative approach using content analysis was used to analyze data and identify themes.
- RESULTS:** Nineteen students participated in 3 focus group interviews in October 2011. Students identified factors affecting their perceptions on 3 major areas: the role of the pharmacist, pharmacy education and pharmacist prescribing. Students displayed optimism regarding the role of the pharmacist in patient-centred care, but they understood that barriers exist due to a lack of resources, time and practice environments; they acknowledged the discontinuity between what is learned in their undergraduate training and what they see in practice; and they expressed interest in obtaining prescribing authority, though many felt the need for further specialization and training prior to applying for this authorization. Four factors were identified as important for the incorporation of prescribing into the students' future practices: internal motivation, training and comfort, responsibility and communication with other health professionals.
- DISCUSSION:** This work presents some of the first data describing pharmacy students' views on pharmacist prescribing. The study has identified some important implications for formal undergraduate training and pharmacy practice change as a whole.

# Vaccination services in community pharmacies in the province of Quebec

*Jocelyne Moisan, PhD, Chantal Sauvageau, MD, MSc, FRCP(C), Eve Dubé, PhD, Richard Bradet, MSc, Myrto Mondor, MSc*

**BACKGROUND:** Although Quebec pharmacists are not allowed to administer vaccines, they can promote vaccination, counsel clients on vaccination, sell vaccines and provide vaccine administration in their premises.

**OBJECTIVES:** To describe the vaccination services given in Quebec pharmacies and assess the association between pharmacy characteristics, facilitators and barriers perceived by pharmacists and vaccine administration.

**METHOD:** A questionnaire was mailed to the owners of the 1663 pharmacies in Quebec. Questions focused on services provided, characteristics of the pharmacy and facilitators and barriers to vaccine administration. In order to identify factors independently associated with vaccine administration, multivariate log-binomial regression was conducted.

**RESULTS:** 1102 (67%) questionnaires were analyzed. Vaccination was promoted in 73% of the pharmacies, counselling on vaccination in 65%, sale of vaccines in 90% and vaccine administration in 27%. Pharmacies more likely to offer vaccine administration reported a higher number of opening hours, the presence of another health professional in the pharmacy, not being located in the same building as a medical clinic, having an agreement to collaborate with a public health unit or a medical clinic, as well as lower perceived difficulties with lack of demand and insurance costs. Forty-four percent of respondents were planning to offer vaccine administration in the next 5 years and 50% answered they would be willing to administer vaccines themselves if legislative modifications were made.

**DISCUSSION:** Quebec's pharmacists are involved in immunization and many are willing to increase their involvement.

# Staff and student satisfaction with Alberta student pharmacists administering vaccination in the University of Alberta annual influenza campaign

*Hoan Linh Banh, PharmD, Aron Walker, BScPharm, Kevin Friese*

## ISSUE:

Administration of vaccinations is an expanded scope of practice that is embraced by most pharmacists in Alberta. In the United States, it has been shown that pharmacy students participating in immunization initiatives can improve vaccination rates.

## SOLUTION AND

**HOW IT WORKS:** In 2011, the University of Alberta's Faculty of Pharmacy and Pharmaceutical Sciences (in collaboration with the University's Human Resources, Risk Management and Health Centre, the Alberta College of Pharmacists, Alberta Health Services and Alberta Health and Wellness) was able to establish 5 clinic days for pharmacy and nursing students to administer vaccines to university staff and students. Eighty pharmacy students and 27 community pharmacists were recruited. The last 2 days of the clinic provided pharmacy students with a unique opportunity to work with nursing students in an interdisciplinary setting.

## OUTCOMES:

In 5 days, both pharmacy and nursing students administered a total of 4477 doses of vaccine, with nearly 3000 doses administered by pharmacy students. The clinic was successful in allowing the students opportunities to practise and improve their injection skills and patient counselling. The flu clinic was extremely successful in promoting the role of pharmacists as immunizers. Satisfaction surveys were given to staff and students regarding their vaccination experience by pharmacy students. Over 99% of the participants were either satisfied or very satisfied with the service, with 92% willing to receive vaccines from a pharmacist in the future.

## IMPLICATIONS

**FOR PRACTICE:** Because prospective employers expect pharmacists to set up and operate flu clinics in pharmacies, participation of this event will facilitate entry into practice for students after graduation.



# Ambulatory pharmacy services specializing in chronic pain and opioid management

*Victoria Su, BSc(Pharm), ACPR, PharmD, Karen Ng, BScPhm, ACPR, PharmD, Laura Murphy, PharmD, ACPR, BScPhm, RPh*

**ISSUE:** Innovative clinical pharmacy services provide medication management for patients with chronic non-cancer pain at Altum Health, an interprofessional ambulatory clinic funded through third-party payers. Pharmacists complete assessments in collaboration with consultant physicians and psychiatrists at the request of the payer, focusing on chronic pain, opioid dependence and mental health disorders. Services include a report outlining an opioid management plan with other medication recommendations for implementation by the patients' primary care provider.

**SOLUTION AND HOW IT WORKS:** Selected patients are referred for interprofessional group or individualized treatment programs for opioid management, which include pharmacist education, monitoring of opioid rotations, opioid tapering, inpatient medical withdrawal at the Centre for Addiction and Mental Health and/or initiation of methadone or buprenorphine maintenance therapy. Participation is contingent on payer approval.

**OUTCOMES:** After the initial pilot with a 0.5 full-time equivalent (FTE) pharmacist in 2010, pharmacy services have expanded to 3 FTE positions. The pharmacists are hired by the University Health Network Pharmacy Department and are contracted to Altum Health.

**IMPLICATIONS FOR PRACTICE:** Billing data from 2011 indicate that pharmacists completed 263 interprofessional assessments and 99 treatment consultations for 65 patients. Pharmacy services expanded to all 5 Altum Health satellite clinics across Ontario with the use of video-conferencing equipment to provide live pharmacist-patient interactions. Preliminary outcome data show that 6 patients completed treatment in 2011 and achieved an average 25% reduction in daily morphine equivalent dose. Data collection is ongoing. The success of the treatment program is occasionally limited by a patient's motivation, funding or difficulty in implementing the treatment plan with the primary care provider.

# AGIR: A program for osteoarthritis patients

*Lyne Lalonde, BPharm, PhD, Élisabeth Martin, MSc, Dave Bergeron, MSc, Carole Haworth, Manon Choinière, PhD,  
Phillippe De GrandPré, BPharm*

**BACKGROUND:** As part of a knowledge translation program, a 1-day workshop was conducted to explore the perception of primary care (PC) actors regarding changes that could be implemented to provide better care to patients with chronic non-cancer pain. Priorities for action included the provision of an interprofessional continuing education program and the improvement of patient's self-management.

**OBJECTIVE:** To translate those priorities for action into a PC program.

**METHODS:** Over an 8-month period, members of the PC community (physiotherapist, pharmacist, nurses, PC physicians, anesthesiologist and researchers) worked together to develop the program and define its target population and components.

**RESULTS:** Patients with osteoarthritis were selected as the target population. The program is entirely supported by a group of interdisciplinary regional clinicians. It includes a self-management program for patients and their families. Over a 2-session period, patients will define their objectives and treatment plan (lifestyle changes and medications). A single-session interactive interdisciplinary training program will be offered by PC physicians, nurses, pharmacists and physiotherapists. Patients will learn about pain management and interdisciplinary collaboration. Pharmacists will also attend a short training session on medication review process and will be invited to meet each patient individually. Finally, PC physicians will have access to pain specialists through weekly telephone consultation services.

**CONCLUSIONS:** The AGIR program was developed by PC actors in accordance with the chronic care model. A pilot trial will be initiated to assess its feasibility and potential effectiveness.

# Development of a blueprint for a certification examination to register pharmacy technicians

*John Pugsley, BScPhm, PharmD, Carol O'Byrne, BSP, Lila Quero Munoz, PhD*

**BACKGROUND:** The Pharmacy Examining Board of Canada (PEBC) was charged with the development of a process and examinations to certify pharmacy technician candidates at entry-to-practice in Canada. Using iterative, consultative methodologies, the National Association of Pharmacy Regulatory Authorities (NAPRA) developed a competency profile that supports an expanded scope of practice for pharmacy technicians.

**OBJECTIVE:** PEBC needed to develop an examination blueprint and content that would be appropriate for pharmacy technicians assuming an expanded scope of practice. However, few practitioners were involved in or accountable for the full scope of practice. Thus, PEBC needed to develop an examination blueprint and content on the basis of the NAPRA competencies and the vision of progressive pharmacy technicians who were venturing into these domains.

**METHODS:** In 2007, PEBC determined that certification would be based on a 2-part examination, including a multiple choice examination (Part I) and a performance-based examination (Part II) using an Objective Structured Clinical Examinations format, in order to assess the NAPRA competencies. PEBC held a “blueprinting workshop” to determine the relative importance of NAPRA’s pharmacy technician competencies, drilling down to the levels of competency units and elements. In 2008, PEBC finalized the blueprint that guided the development of both a written multiple choice and performance-based examination.

**RESULTS:** The presentation will provide an overview and psychometric results of the blueprinting process, describe challenges and issues encountered in visioning the expectations of a newly regulated profession and demonstrate how the blueprint provides sound support for the pharmacy technicians’ competencies and an expanded scope of practice at entry-to-practice.

# Personality traits of hospital pharmacists

*Meagen Rosenthal, MA, Jill Hall, BScPhm, Ross T. Tsuyuki, PharmD*

**BACKGROUND:** The profession of pharmacy has expressed a vision to become more patient-centred; however, change has been very slow. It has been suggested that pharmacists themselves may be the ultimate barrier to change due to their culture and mindset. The examination of personality traits may uncover some aspects of individual pharmacists' contributions to practice change initiatives. We sought to determine the personality traits of hospital pharmacists.

**METHODS:** This study was a cross-sectional survey of hospital pharmacists in Alberta. Invitations to participate in the anonymous questionnaire were sent via email to all 684 hospital pharmacists in Alberta. We used the Big Five Inventory (BFI); a validated, reliable instrument that measures 5 personality dimensions. Each dimension is measured on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree).

**RESULTS:** 314 pharmacists completed the questionnaire. Hospital pharmacist respondents were generally agreeable (4.07 SD  $\pm$  0.51), conscientious (3.89 SD  $\pm$  0.43) and open to new experiences (3.45 SD  $\pm$  0.57). They were also emotionally stable (2.53 SD  $\pm$  0.66). Subgroup analysis yielded significant differences between staff pharmacists and managers on the trait of extroversion (3.21 versus 3.76,  $p < 0.05$ ) and between staff pharmacists and clinical practice leaders (3.90 versus 3.65,  $p < 0.05$ ) and clinical practice leaders and managers (3.65 versus 4.01,  $p < 0.05$ ) on the trait of conscientiousness.

**CONCLUSION:** The results of this study provide some of the first population data on hospital pharmacists' personality traits. Hospital pharmacists are generally agreeable, conscientious and emotionally stable. These data will be important to help shape hiring and continuing professional development programs for the advancement of pharmacy practice.

# Does personality explain research performance?

*Meagen Rosenthal, MA, Ross T. Tsuyuki, PharmD*

- OBJECTIVE:** A frequent observation in pharmacy practice research is that although some pharmacists will volunteer to participate, many will drop out or not fully participate, despite attending meetings and receiving training (consuming significant resources). The objective of this study was to determine the relationship between pharmacists' personality traits using the validated Big Five Inventory (BFI) and their performance in a pharmacy practice research study.
- METHODS:** Pharmacists from a large chain pharmacy in Alberta were asked to volunteer to participate in a pharmacy practice research study involving prescribing. A requirement for participation in the study was to obtain additional prescribing authorization (APA). Pharmacists were provided with support in this process and all were asked to complete the BFI at baseline.
- RESULTS:** Twenty-four pharmacists expressed interest in participating in the study and attended the launch meeting and training sessions. Ten pharmacists did not complete the BFI and subsequently dropped out of the study. Of the 14 remaining, 5 more pharmacists dropped out of the study, 4 made progress towards completing their APA application, 3 submitted their APA application and 2 already had their APA. Pharmacists who dropped out of the study had lower levels of extroversion, agreeableness, conscientiousness and openness compared to those who made progress on their applications or submitted them.
- CONCLUSIONS:** Even in this small, real-world study, we observed that pharmacists embracing practice change were more extroverted, agreeable and conscientious than those who did not. This may have future implications for selecting and training/supporting pharmacists through practice change initiatives.



# Factors affecting community pharmacists' participation in pharmacy practice research

*Nicole Tsao, BSc, MScPharm, Meagen Rosenthal, MA, Carlo Marra, BSc(Pharm), PharmD, PhD, Larry Lynd, BSP, PhD, Ross Tsuyuki, BSc(Pharm), PharmD, MSc*

- OBJECTIVE:** To determine factors affecting community pharmacists' ability to participate in research and assess their attitudes towards pharmacy practice research.
- METHODS:** Surveys were mailed to 3 groups of pharmacists across British Columbia: Active group: pharmacists who enrolled and actively participated in a previous research study [unpublished] (n = 61); Inactive group: pharmacists who enrolled in the above-mentioned study but did not participate (n = 85); and Control group: a sample of pharmacists not enrolled in the study (n = 300). Survey questions included demographics, perceived factors affecting research participation, attitudes towards pharmacy research and the Big Five Inventory (BFI) personality test.
- RESULTS:** Response rates from the 3 groups were 63%, 37% and 14% respectively. The proportion of pharmacy owners was highest in the active and inactive groups (48%, 42% and 27%). Active group pharmacists had higher education levels. No statistically significant differences in BFI scores were found between groups. Overall, the most frequently reported barrier was lack of time (78%) and patient participation (42%). Significantly more pharmacists in the active group perceived lack of patient interest as a barrier. Frequently cited promoters of participation among all groups included interest in the research topic (55%) and relevance of the research to practice (40%). The majority of pharmacists believe research will lead to an increased scope of practice (89%) and reimbursement of pharmacy services (77%).
- DISCUSSION:** Most pharmacists believe participating in pharmacy practice research will advance the profession but barriers such as the lack of time remain a reality. Future research designs should emphasize relevance to patients and practice.

# Is a pharmacy-based research network a valuable option for improving research?

*Ghaya Jouini, Lyne Lalonde, BPharm, PhD, Joanie Hébert, Marie-Claude Laliberté, MSc, Élisabeth Martin, MSc*

**OBJECTIVE:** To determine whether developing a practice-based research network (PBRN) of pharmacists would constitute a strategy for improving and facilitating pharmacy practice research.

**METHOD:** In a survey of community pharmacists in Montreal (Quebec, Canada) and surrounding areas, a questionnaire was mailed to a random sample of 1250 pharmacists following a modified version of Dillman's Tailored Design Method. Two of the 28 questions were related to PBRNs; one assessed the pharmacists' interest in participating in a PBRN and the other sought their views on which services and activities such a network might offer.

**RESULTS:** 571 (45.7%) pharmacists completed the questionnaire. Of the respondents, 58.9% indicated they were "very interested" or "interested" in joining a PBRN, while 41.1% reported little or no interest. The most popular potential services were access to continuing education training programs developed in research projects (75.3%), access to clinical tools developed in research projects (76.4%), information about conferences on pharmacy practice research (63.7%) and participation in the development of new pharmaceutical practices (55.7%).

**DISCUSSION:** This study suggests that a PBRN comprising community pharmacists and researchers is of interest to a majority of clinicians and constitutes a valuable option for optimizing and facilitating pharmacy practice research.

# Eyes wide shut: Assessing bias in professional development

*Shawn Bugden, BSc(Pharm), MSc, PharmD*

- OBJECTIVE:** Our objective was to review the recognition of bias in profession development (PD) programs for pharmacists in Manitoba.
- METHODS:** A review was conducted on the evaluation forms completed on PD programs in Manitoba from 2008–2011. The level of pharmacist-recognized bias was compared with the source of sponsorship for the program and the pattern in bias recognition over time was reviewed. The level of bias recognition by pharmacists was compared with the recognition of bias by third-year pharmacy students for 3 individual PD programs.
- RESULTS:** Overall, pharmacists felt the PD programs were free of bias 95% of the time. There was no evidence of a difference in bias recognition between years (ANOVA  $F = 1.292$ ,  $p = 0.302$ ). Bias was more common in programs that received industry sponsorship (18%) than in programs that received only non-commercial support (1%;  $p = 0.03$ ). When 3 individual programs were evaluated in more detail, 100% of pharmacy students found substantial bias in the PD programs while only 8% of practising pharmacists identified bias in these programs.
- DISCUSSION:** The challenges of bias in PD were identified in a recent Institute of Medicine Report. Our review suggests that pharmacists do not always recognize bias in professional development. The recognition of bias by pharmacy students in a focused critical evaluation exercise suggests that critical evaluation skill development may help pharmacists to become more informed consumers of medical information. Ensuring that pharmacists are able to evaluate drug information in the best interest of patients is key to the provision of quality pharmaceutical care.

# Programme ProFiL: A training-and-communication network program in nephrology

*Ghaya Jouini, Lyne Lalonde, BPharm, PhD, Roxanne Forget, BPharm, Anne Lord, BPharm, MSc, Élisabeth Martin, MSc*

**OBJECTIVE:** Chronic kidney disease (CKD) is highly prevalent. ProFiL is a training-and-communication network program that was created to support community pharmacists in the management of patients with CKD. It includes an interactive web-based training program supported by a clinical guide as well as access to essential clinical data and to a consultation service offered by pharmacists with expertise in nephrology. The objectives of this interim analysis were to describe the prevalence of drug-related problems (DRPs) and the current knowledge and skills of community pharmacists about CKD.

**METHODS:** In a cluster randomized controlled trial, patients were recruited in predialysis clinics. Their community pharmacies were randomized to the ProFiL or the Usual Care (UC) group. Patients' characteristics at baseline were documented and DRPs were assessed. Pharmacists' knowledge was documented at baseline using a self-administered questionnaire.

**RESULTS:** 169 patients (ProFiL: 118; UC: 51) and 81 pharmacies (ProFiL: 53; UC: 28) participated. Patients were mostly men (60%) with a mean age of 66 years (SD = 13) suffering from severe CKD (59%). A mean of 3.5 and 3.6 DRPs per patient (SD = 2.1) were detected in the ProFiL and the UC, respectively. Most pharmacists were women (66%) with a mean of 10.8 years (SD = 9.5) experience. Knowledge scores were similar in the 2 study groups (ProFiL: 68.9%; UC: 70.2%).

**DISCUSSION:** These results support the relevance of the ProFiL program for community pharmacists; the prevalence of DRPs in CKD patients is high and the current knowledge and skills of community pharmacists is not optimal.

# Pilot community pharmacy–based diabetes program using health coaching principles

*Feng Chang, RPh, BScPhm, PharmD, Nishi Gupta, BSc, Laura Smith, Dan Stringer, RPh, BSc, BScPhm*

- OBJECTIVE:** Over 9 million Canadians are living with diabetes or are pre-diabetic. A key challenge is effective self-management. Health coaching targets behavioural changes using individually tailored solutions to develop and attain health-promoting goals.
- METHODS:** A community pharmacy in rural Ontario set up a pilot diabetes program incorporating health coaching from May to August 2011. A trained pharmacist invited patients to participate and provided supervision. The program set up one-on-one meetings that involved addressing health queries and goal-setting for better self-management. During each meeting, goal progress along with weight, waist circumference, blood pressure and blood glucose were tracked. Participant satisfaction was surveyed at the end.
- RESULTS:** One female and 3 male participants were recruited. The average age was 61 years. Participants' confidence in achieving their goals and perception of the importance of their goals increased, with 1 participant doubling in confidence to self-manage. One participant lost 7 lbs, while 3 out of 4 participants either lost weight or waist circumference. All the participants felt that the pilot benefited them by establishing and working towards a healthier lifestyle.
- DISCUSSION:** Hurdles faced included recruitment and perceived overlap with other resources in the community. Patients also did not perceive the pharmacy as a learning setting as compared with a medical clinic. Better recruitment strategies and timing are needed, as are ways to redefine the image of the pharmacist. The pilot was successful in providing benefits to the participants and highlighting further areas to be explored. A larger evaluation program is being planned for health coaching provision at community pharmacies.



# How knowledge, attitudes and relationships influence pharmacists' practices in harm reduction

*Tyler Watson, BSc, Christine Hughes, BScPharm, PharmD*

**OBJECTIVE:** Injection drug use (IDU) causes significant morbidity and mortality and thus has been the focus of many harm reduction strategies. The objective of this study was to identify current harm reduction services offered in community pharmacies as well as pharmacists' attitudes toward such services.

**METHODS:** This was a qualitative study of community pharmacists in Alberta. Pharmacists were purposefully selected based on practice location. Interviews were conducted either face-to-face or by telephone using semi-structured questions and were recorded and transcribed verbatim. Data were analyzed and coded using content analysis to identify key themes.

**RESULTS:** Eleven community pharmacists were interviewed. The most common harm reduction services described were methadone dispensing and needle exchange or sale. Most pharmacists viewed their role in providing services to IDUs positively, however, some hesitation was expressed toward needle exchange and sale. Increased exposure to IDUs was associated with more positive attitudes. Communication and collaboration with other health care providers was identified as essential to providing optimal care. While most pharmacists felt they had enough clinical knowledge, system gaps such as awareness of related health and social supports hindered pharmacists' effectiveness. Other barriers identified include staffing and lack of reimbursement.

**DISCUSSION:** Community pharmacists are largely supportive of their role in harm reduction but they require better integration into the health care team to expand this role. Additionally, more exposure to harm reduction service users in educational programs may assist pharmacists in developing this type of practice. Future research is needed to confirm the generalizability of these findings.

## What can we learn from analysis of a pharmacist listserv?

*Barbara Farrell, BScPhm, PharmD, FCSHP, Melanie Trinacty, BSc, BScPhm, Terri Schindel, BScPhm, MCE, FCSHP, Lisa Dolovich, BScPhm, PharmD, MSc, Grant Russell, MBBS, FRACGP, MFM, PhD, Lisa Sunstrum, BSc, Natalie Kennie, BScPhm, PharmD*

**OBJECTIVES:** Listservs are increasingly used to share knowledge among professionals. This study examined participant use and educational needs revealed by contributions to the Canadian Pharmacists Association and Canadian Society of Hospital Pharmacists joint Primary Care Pharmacist Specialty Network (PC-PSN) listserv.

**METHODS:** Qualitative inductive and deductive content analysis was used to examine 1 year of archived PC-PSN listserv posts (2010). This was complemented by documenting participation by practice setting, academic affiliation and province. Simple coding using NVivo classified the main content of the posts.

**RESULTS:** 129 participants (52.7% of listserv members) posted to the listserv. Participants worked in family practice (31%), community pharmacy (20%), hospital pharmacy (12%), clinics (11%) and other practice areas (26%), with 20% having an academic affiliation. Over half practised in Ontario (52.7%), with others distributed across Canada. Agreement between coders was excellent (0.78); 623 posts were coded. Postings were diverse, including patient-specific therapeutic questions, information exchange and practice management needs. Some questions prompted simple answers while others generated conversation and debate. Participants would benefit from education regarding posing comprehensive clinical questions and extrapolating evidence to individual, complex patients. Several participant roles emerged.

**DISCUSSION:** The PC-PSN listserv provides participants from varied practice and geographic backgrounds with a forum to discuss issues and solicit input and support. Prominent learning needs that include critical appraisal and formulating focused questions will assist educators in designing useful education experiences. Participant roles may affect participation and warrant further analysis. Applying this methodology to other listservs would aid in understanding factors that contribute to successful listserv use.

# Patients benefit from health care professionals' use of e-Therapeutics<sup>+</sup>

*Marc Riachi, BSc(Hons), BSc(Pharm), Carol Repchinsky, BSc, BSP, Pierre Pluye, MD, PhD, Janique Johnson-Lafleur, MSc, Barbara Jovaisas, BSc(Pharm), Roland Grad, MDCM, MSc, CCFP*

- OBJECTIVE:** In the context of searching for information in electronic knowledge resources, our objective was to produce clinical vignettes describing Primary Health Care Professionals' (PHCP) self-reported information use and subsequent patient health benefits.
- METHODS:** Mixed methods of research were used, combining prospective observational quantitative study and qualitative multiple case study into clinical vignettes. Participants included 10 family medicine residents, 10 family health team pharmacists and 10 registered nurse practitioners who accessed e-Therapeutics+, leading to 787 searches for information over an average of 31 weeks in 2008-2009. Using the Information Assessment Method (IAM), participants rated their searches and the rated searches were examined in interviews guided by log-reports of completed IAM questionnaires. Critical searches (cases) were defined as clearly described searches where clinical information was used for a specific patient. For each case, interviewees described information-related patient health outcomes.
- RESULTS:** 130 critical searches (cases) were described as clinical vignettes. Of those, 52 vignettes corresponded to clinical situations where information use was associated with 1 or more than 1 type of patient health outcome: increased patient knowledge ( $n = 34$ ), avoidance of unnecessary or inappropriate intervention ( $n = 28$ ), prevention of disease or health deterioration ( $n = 10$ ), health improvement ( $n = 7$ ) and increased patient satisfaction ( $n = 3$ ).
- DISCUSSION:** PHCPs' self-reported information use results in patient health benefits. This may encourage clinicians to search for information more often and provide justification for more information retrieval training. This paper reports the first systematic, comprehensive examination of the use of information retrieved by PHCPs and its subsequent benefits.

# Enhanced medication safety and continuous quality assurance in pharmacy practice

*Certina Ho, RPh, BScPhm, MIST, MEd, Calvin Poon, Gary Lee, BEng, Roger Cheng, RPh, BScPhm, PharmD, Patricia Hung, BScPhm*

**ISSUE:** Medication system safety and risk management is a relatively new concept in community pharmacy practice when compared to other health care settings in Canada. This stems in part from the lack of a medication incident reporting and learning program designed for community pharmacies.

**SOLUTION:** Based on experience acquired from hospital-based incident reporting, the Institute for Safe Medication Practices Canada (ISMP) Community Pharmacy Incident Reporting (CPhIR) program was designed specifically to provide opportunities to optimize learning from past mistakes in community/ambulatory pharmacies. Core elements of CPhIR were determined through teleconferences conducted with pharmacists from Ontario and Nova Scotia. Since CPhIR's official launch in April 2010, over 23,000 medication incidents have been anonymously reported to ISMP Canada.

**HOW IT WORKS:** CPhIR allows individual pharmacies to perform incident analysis and monitor trends within their own setting and to view the national aggregate. ISMP Canada analyzes CPhIR medication incident data to determine national trends and disseminate shared learning through safety bulletins and newsletters. Currently, there are over 300 registered CPhIR users in Canada.

**IMPLICATIONS FOR PRACTICE:** CPhIR contributes to the Canadian Medication Incident Reporting and Prevention System. Nationwide implementation of CPhIR may be temporarily obstructed, as different provinces may have various priorities that need to be addressed regarding continuous quality assurance in community pharmacy practice. It is anticipated that CPhIR will be used by all community pharmacies for medication incident reporting and analysis across Canada, as the creation of a culture of patient safety with the support of a non-punitive reporting system needs to be encouraged within all areas of pharmacy practice.

# Challenges and benefits of quality improvement programs in community pharmacy

*Todd A. Boyle, PhD, Thomas Mahaffey, PhD, Neil MacKinnon, PhD, Amelia Mahaffey, Kellie Duggin*

- OBJECTIVE:** Standardized continuous quality improvement (CQI) programs, when coupled with web-based technologies, online reporting tools and a national database, enable quality related event (QRE) (medication error and near miss) outcomes to be widely disseminated. Because such programs are still in their infancy, little is known about the challenges and benefits of sustained program use. This research identifies such benefits and challenges.
- METHODS:** A multi-site study of the SafetyNET-Rx standardized CQI program ([www.safetynetrx.ca](http://www.safetynetrx.ca)) involving 15 community pharmacies in Nova Scotia was conducted in the summer of 2011. Semi-structured interviews were conducted with the CQI facilitator (i.e., staff pharmacist or technician) in each pharmacy 1 year after they began using SafetyNET-Rx. Questions captured the key challenges and benefits of SafetyNET-Rx use, including how staff relationships and attitudes towards QRE reporting changed since program adoption.
- RESULTS:** The top challenges were related to time, cost and program buy-in. The most significant benefits included decreased QRE occurrence, increased understanding of areas that required improvement and increased awareness of the benefits of reporting. Attitudes improved with an end to the “blame” culture and increased openness. Overall, pharmacists had strong buy-in for the program but technicians were more hesitant.
- DISCUSSION:** Regulators and the public are pressuring pharmacies to adopt formal CQI programs. This research provides pharmacy managers with a number of issues to be aware of as they undertake such initiatives, as well as the impact (both positive and negative) that such programs may have.



# Analysis of medication incidents in community pharmacy

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Thomas Mahaffey, PhD, Todd Boyle, PhD*

- OBJECTIVE:** SafetyNET-Rx is a continuous quality improvement program for community pharmacies in Nova Scotia. A component of this project is to determine the underlying system-based factors which contribute to medication incidents in community pharmacies and focus on learning from incident reporting.
- METHODS:** From August 2008 to January 2010, 1544 incidents were voluntarily reported by 13 community pharmacies participating in the SafetyNET-Rx Phase 1 pilot project. There were 12 duplicates or test entries and 1532 incidents were analyzed, with a focus on the severity of outcome of the incidents and medication-use areas associated with these incidents.
- RESULTS:** Of the 1532 incidents, 84% (1281) were near misses and 16% (250) resulted in no harm, where 36% (90 of 250) involved patients who actually received and ingested the medication. Only 0.07% (1 of 1532) resulted in temporary patient harm, which required the intervention of contacting the physician immediately. The majority of incidents occurred during the Order Entry/Transcription and the Dispensing/Delivery stages. The most common types of incidents reported were incorrect dose (18%), incorrect duration of treatment (14%) and incorrect strength/concentration (13%). The top 5 medications reported were metoprolol, amoxicillin, rosuvastatin, lorazepam and metformin. Possible contributing factors to these medication incidents include look/sound-alike drug names, interruptions in workflow, misunderstood orders, look-alike packaging and illegible prescriptions.
- DISCUSSION:** This study serves as an initial attempt to study factors that may contribute to medication incidents in community pharmacies. Through the analysis of incidents and sharing of findings, practitioners can learn from reported incidents and implement safeguards.

# Quality-related event reporting: Insights from provincial pharmacy regulators

*Thomas Mahaffey, PhD, Todd A. Boyle, PhD, Neil MacKinnon, PhD, Andrea Scobie, MHSA, Jeffrey Taylor*

- OBJECTIVE:** Given recent high profile cases involving quality-related events (QRE) (i.e., medication errors and near misses), it is important that key pharmacy stakeholders collectively develop strategies to enhance QRE reporting and learning. Pharmacy regulatory authorities (PRAs) play a critical role in such efforts. This research explores the perceptions of Canadian PRAs with respect to QRE reporting and learning in community pharmacies.
- METHODS:** In the fall of 2011, 2 focus groups were conducted with officers from Canadian PRAs. Pharmacy inspectors comprised the first group, while deputy and assistant registrars comprised the second. Questions addressed a number of QRE reporting and learning issues, including PRA perceptions of the various stakeholder roles for reducing QREs and strategies for enhancing QRE reporting and learning.
- RESULTS:** A total of 15 individuals were involved in the focus groups, representing 9 Canadian PRAs. Each focus group lasted for approximately 90 minutes. Differences existed with the perceived roles of the PRAs with respect to QRE reporting and learning, relationships between PRAs and their respective advocacy groups, PRAs' experience with using CQI programs to improve QREs and how to best measure if QRE learning is occurring in community pharmacies.
- DISCUSSION:** Increased training and education on the benefits of QRE reporting and learning, development of complete and meaningful metrics to assess QRE reporting and the learning and development of formal and mandatory CQI programs were viewed to be immediate steps to enhance QRE reporting and learning. The creation of a national minimum standard related to QRE reporting and learning was viewed to be more of a long-term goal.

# A new tool for evaluating the severity of drug-related problems

*Ghaya Jouini, MSc, Patricia Quintana-Bárcena, Lyne Lalonde, PhD, Anne Lord, MSc, Élisabeth Martin, MSc*

- OBJECTIVE:** The quality of medication use in chronic kidney disease (CKD) patients is not always optimal, with a mean of 3.5 drug-related problems (DRPs) per patient. However, no information is available regarding the severity of the DRPs. The aim of this study was to develop a set of criteria to evaluate the severity of DRPs in CKD patients from a community pharmacy perspective.
- METHODS:** The Schneider criteria were initially adapted by a team of clinicians and researchers to take into account the type of community pharmacist interventions required to manage DRPs at each level of severity. Ten community pharmacists were then consulted individually. The relevance of each criterion was individually rated by 12 experts on a scale from 1 (not relevant) to 4 (relevant). Thereafter, in a consensus meeting, criteria initially judged as irrelevant by more than 20% of experts were discussed.
- RESULTS:** Three levels of severity (mild, moderate and severe) were defined and each level was further categorized in 2 sub-levels. For each level and sub-level, the specific pharmaceutical interventions required to manage DRPs were listed. These include the provision of information to patients, application of a collective prescription, monitoring of physiologic parameters (e.g., blood pressure or glycemia), prescription adaptation, writing a pharmaceutical opinion and referral of patients to their primary care physician or to the emergency department.
- CONCLUSION:** The psychometric properties of these criteria will now be evaluated. If satisfactory, these criteria will constitute a new tool for pharmacy practice researchers.

## Safe use of medications in seniors

*Certina Ho, RPh, BScPhm, MSt, MEd, Calvin Poon, Atsushi Kawano, BSc, MSc*

- OBJECTIVE:** Geriatric populations are at risk of medication errors due to the increased likelihood of complex disease states and use of multiple medications. Identification of geriatric medication incident themes can facilitate positive changes within community practices to meet future demands of an aging population. By analyzing medication incidents involving geriatric patients, medication incident themes related to the medication-use process can be identified in the community pharmacy practice setting.
- METHODS:** An aggregate analysis of geriatric medication incidents was performed using reports anonymously submitted to the Institute for Safe Medication Practices Canada (ISMP Canada) Community Pharmacy Incident Reporting (CPhIR) Program from September 2010 to September 2011. The analysis was performed using a search criterion of >65 years for the age category of a medication incident.
- RESULTS:** A total of 265 reports were included in the analysis. The 3 most common types of medication incidents within the geriatric population were incorrect quantity (23.0%), incorrect drug (17.7%) and incorrect dose/frequency (13.2%). An aggregate/qualitative analysis identified 4 major themes that are associated with geriatric medication incidents: “allergy” (in particular, sulfonamide allergies), “blister packs” (due to frequently adjusted medications), “multiple medications” (leading to confusion at refills) and “formulations” (related to the use of dangerous abbreviations and mix-up of suffixes to drug names).
- DISCUSSION:** Multiple risk factors associated with geriatric patients make medication incidents more prevalent in this population. Understanding the common themes and contributing factors of geriatric medication errors in community pharmacy practices can reduce the occurrence of such incidents.

## Medication safety in pediatrics

*Certina Ho, RPh, BScPhm, MSt, MEd, Calvin Poon, Atsushi Kawano, BSc, MSc*

- OBJECTIVE:** The pediatrics population is a unique one, with characteristic and vulnerable practices in medication safety. The administration of safe medication practices with pediatric medications requires special attention to unique areas. This research project aims to identify themes and corresponding contributing factors of pediatric medication incidents that occur in community pharmacy practice.
- METHODS:** An aggregate analysis of pediatric medication incidents was performed using reports anonymously submitted to the Institute for Safe Medication Practices (ISMP) Canada Community Pharmacy Incident Reporting (CPhIR) Program from January to August 2011. The analysis was performed using a search criterion of 0–28 days inclusive or >28 days to 18 years inclusive for the age category of a medication incident.
- RESULTS:** A total of 454 reports were included in the analysis. Incorrect dose/frequency represented the most prevalent incident type (29.7%). Pediatric medication incident themes were identified based on medication-use processes. Major themes identified were “general order entry errors” (e.g., unit errors, typing in the wrong number, look-alike or sound-alike drug names), “incorrect patient,” “allergy,” “high-alert medications,” “reconstitution” and “weight-based dosing.”
- DISCUSSION:** The complexity surrounding pediatric medication administration increases the risk of medication errors. Pediatric medication incidents can be reduced by understanding the common themes and potential causes of errors that are unique to this population group. This project highlighted 2 medication incident themes that are unique to the pediatric population — “reconstitution” and “weight-based dosing.” Community pharmacists can improve delivery of care to the pediatric population by resolving contributing factors that are associated with these medication incidents.



# Oralchemotherapy.ca: A community pharmacy cancer medication safety tool

*Tibor van Rooij, Serena Rix, Sharon March*

- OBJECTIVE:** With the increased availability and use of oral chemotherapeutics agents, a greater chance of prescribing error arises, especially when the health care professionals involved have limited experience with these medications. We present an innovative solution to help the dispensary and pharmacists identify problems associated with oral chemotherapy quickly, to achieve timely resolution and most importantly, to avoid patient harm. We have constructed a repository to disseminate information to pharmacists related to oral chemotherapy prescribing: [www.oralchemotherapy.ca](http://www.oralchemotherapy.ca).
- METHODS:** This website features researched, comprehensive, 1-page monographs for each oral chemotherapeutic available in Canada, including risk stratification (high, moderate, low) associated with each medication as well as drug interaction tables.
- RESULTS:** The website, [www.oralchemotherapy.ca](http://www.oralchemotherapy.ca), is now available with monographs and drug interaction tables. Printable PDF versions of the monographs will be accessible in the near future.
- DISCUSSION:** It is hoped that the use of this simple yet innovative solution will empower non-oncology pharmacists and other health care professionals in the safer prescribing and dispensing of oral chemotherapeutic agents as well as optimize patient safety and improve patient-centred care. We plan to host workshops to educate pharmacists on potential issues they may encounter when dispensing oral chemotherapy and introduce them to [www.oralchemotherapy.ca](http://www.oralchemotherapy.ca) as an easy-access, rapid and concise resource to improve patient safety.

# Impact of a drug access facilitator in a chemotherapy clinic

*Mei Shi, BScPhm, Daniela Gallo-Hershberg, PharmD, Nicole Harvey*

- OBJECTIVE:** Obtaining reimbursement and access to treatment and supportive therapies in outpatient chemotherapy clinics has been fragmented where multiple stakeholders, including patients, are involved. The role of a Drug Access Facilitator (DAF) was created to reduce wait time for treatments, clinician administrative workload and stakeholder frustration.
- METHODS:** Through interviews with key stakeholders, a needs assessment of the existing reimbursement process was conducted. This led to the development of a new streamlined workflow and creation of a centralized DAF role and drug-specific access protocols. A pharmacy technician was selected to fulfill this role, as the DAF would require extensive knowledge of medication products and experience dealing with third-party payers. A pharmacist was available for consultation for clinically challenging cases.
- RESULTS:** Over a 6-month period, the DAF managed 140 reimbursement cases. The average time for approval for Exceptional Access Program applications decreased from 35 days to 10 days. A similar pattern was observed with Special Access Program and Trillium Program applications. Also, centralization of the drug access workflow to a single individual reduced the administrative workload for members of the interprofessional team. Staff and patients reported high levels of satisfaction, with average scores of 90.8% and 88.3%, respectively, in a follow-up survey.
- DISCUSSION:** The DAF demonstrated a positive impact for the chemotherapy clinic. This role can be applied to various medical specialties outside of oncology for medications with reimbursement and access barriers. This concept also aligns with the future of pharmacy practice, as it empowers pharmacy technicians to expand their scope of practice to promote seamless care.

# Pharmacy loyalty and quality of antidiabetes drug use

*Jean-Pierre Grégoire, MPH, PhD, FISPE, Caroline Sirois, BPharm, PhD, Jocelyne Moisan, PhD*

**OBJECTIVES:** Among individuals treated with oral antidiabetes drugs, the objective of this study was to assess patients' pharmacy loyalty, factors associated with loyalty and the effect of loyalty on the quality of drug use.

**METHODS:** Using the Quebec health administrative databases, we carried out a cohort study of individuals aged  $\geq 18$  years who had started an oral antidiabetes treatment. Predictors were measured during the first year of treatment. Those considered loyal had filled all of their prescriptions in 1 pharmacy during the second year. The following indicators of quality of use were measured in the third year: compliance with antidiabetes drug, use of ace inhibitors (ACEI) or angiotensin receptor blockers (ARB) and use of statins. Predictors and outcomes were assessed using multivariate logistic regressions.

**RESULTS:** Among 122,596 individuals, 64% were loyal. Patients more likely to be loyal were aged 41–64 years [adjusted odds ratio: 1.50; 95% confidence intervals: 1.42–1.58] and  $\geq 65$  years (1.75; 1.66–1.85); used an atypical antipsychotic (1.07; 1.01–1.13); visited a pharmacy  $\geq 29$  times (1.06; 1.03–1.10) and were hospitalized (1.04; 1.00–1.08). Patients less likely to be loyal were females (0.93; 0.91–0.96); used an antidepressant (0.91; 0.88–0.94); used 8–11 drugs (0.95; 0.91–0.98) and  $\geq 12$  drugs (0.83; 0.80–0.86); visited a physician 10–20 times (0.89; 0.86–0.91) and  $\geq 21$  times (0.76; 0.74–0.79). Loyal individuals were more likely to be compliant with their antidiabetes drug treatment (1.26; 1.22–1.30), to use an ACEI/ARB (1.17; 1.14–1.21) and a statin (1.15; 1.12–1.18).

**DISCUSSION:** Results confirm the hypothesis that loyalty to a pharmacy is associated with better quality of drug use.

# Performance and acceptability of different inhaled medication devices in individuals with asthma and/or COPD

*Hoan Linh Banh, PharmD, Jenny Hoang, Sing-yue Lam, Cheryl Sadowski, BScPharm, PharmD, Andrew Cave, MD*

- OBJECTIVES:** The primary objective of this study is to evaluate the number of patients with COPD and/or asthma who correctly use their inhaled devices. The secondary objective is to determine the acceptability of inhaled devices in these patients.
- METHODS:** We conducted a prospective observational study on patients with asthma and/or COPD who were receiving an inhaled device. Patient recruitment was conducted in specialty respiratory clinics, family medicine clinics and community pharmacies in the Edmonton area.
- RESULTS:** Only results of the specialty clinics are presented. The study is still ongoing in the community pharmacies and family medicine clinics. A total of 73 patients were recruited, with 63% female, mean age 59 years (SD = 16). The percentage of patients who demonstrated correct techniques for handihalers, MDI's, MDI's with spacers, turbuhalers and diskus were 25%, 52%, 69%, 50% and 64%, respectively. The percentage of patients who reported that the devices were acceptable were 90%, 85%, 58%, 86% and 81%, respectively. Acceptability of the devices included those who found the device easy or very easy to use, as well as convenient or very convenient to carry.
- CONCLUSIONS:** Handihalers had the least number of patients with correct technique, while MDIs and spacers had the most patients with correct technique. MDI devices had the highest acceptability, whereas MDIs with spacer had the lowest acceptability. The data obtained from specialty clinics supports that the addition of a spacer to an MDI promotes better technique; however, this may be offset by patients finding them less acceptable.

# TRANSIT: Challenges and priorities for cardiovascular prevention in primary care

*Lyne Lalonde, BPharm, PhD, Éveline Hudon, MD, MClSc, Fabie Duhamel, PhD, Johanne Goudreau, PhD, Marie-Thérèse Lussier, MD, MSc, FCMFC*

**BACKGROUND:** The management of cardiovascular risk factors in patients with multiple chronic conditions is not always optimal in primary care (PC). The involvement of members of the PC community is recommended to develop new models of care and to successfully reshape clinical practices.

**OBJECTIVE:** To identify challenges and priorities for action in PC in order to improve cardiovascular risk management among patients with multiple chronic conditions.

**METHODS:** Physicians ( $n = 6$ ), nurses ( $n = 6$ ), community pharmacists ( $n = 6$ ), other health professionals ( $n = 6$ ), patients ( $n = 6$ ) and family members ( $n = 6$ ), decision makers ( $n = 6$ ) and researchers ( $n = 6$ ) took part in a 1-day workshop. Using the Chronic Care Model (CCM) as a framework, participants in focus groups and nominal groups identified the challenges and priorities for action.

**RESULTS:** Providing patients with appropriate support for lifestyle change and implementing collaborative practices are challenging. Priorities for action fall into 3 CCM domains: 1) Improve the clinical-information system by providing computerized tools for interprofessional and interinstitutional communication; 2) Improve the organization of health care and delivery system design by enhancing interprofessional collaboration, especially with nurses and pharmacists, and creating care teams that include a case manager; and 3) Improve self-management support by giving patients access to nutritionists, personalized health care plans, including lifestyle recommendations, and other resources (community resources, websites).

**CONCLUSION:** Electronic medical records, collaborative practices and self-management support are perceived as pivotal aspects of successful PC prevention programs. Developing and implementing such models are challenging and will require the mobilization of the whole PC community.

# TRANSIT: Improving interprofessional management of cardiovascular risk in primary care

*Lyne Lalonde, BPharm, PhD, Celine Bareil, MPs, PhD, Marie-Thérèse Lussier, MD, MSc, FCMFC, Johanne Goudreau, PhD, Éveline Hudon, MD, MClSc*

**BACKGROUND:** In primary care (PC), the management of cardiovascular risk factors is often suboptimal. The Chronic Care Model (CCM) is a guide for the development of effective chronic disease management. However, such interventions cannot be easily defined and implemented. In participatory research, the PC community identified collaborative practices and self-management support as priorities for action to improve cardiovascular prevention.

**OBJECTIVE:** With the PC community, to translate those priorities into an interprofessional intervention program to manage cardiovascular risk factors in multimorbid patients.

**METHODS:** Members of the PC community, including clinicians, health managers, researchers, administrative support staff, patients and family members took part in 3 large group meetings and 2–3 sub-group meetings to develop the intervention program. Other members of the community and professional corporations contributed to its validation.

**RESULTS:** Preventive care is provided by a team of PC clinicians. The nurse assumes a pivotal role by coordinating interprofessional care. They perform a motivational interview, evaluate family support and refer patients when appropriate to other PC clinicians (nutritionist, kinesiologist, psychologist, tobacco cessation expert and pharmacist). Advanced nursing and pharmaceutical care is supported by collective prescriptions. Patients are actively involved in the selection of their treatment plan, which is supported by a health booklet and an electronic directory of available regional health resources.

**DISCUSSION:** The TRANSIT program is based on the CCM and was developed by and for the PC community, which ensures optimal relevance and applicability. TRANSIT will be implemented in a pragmatic trial where 2 implementation strategies will be tested: facilitation and passive diffusion.



# Using blood pressure kiosks to detect high blood pressure in pharmacies

*Sherilyn Houle, BSP, Ross Tsuyuki, BSc(Pharm), PharmD, MSc, FACC, FCSHP*

**OBJECTIVE:** Public-use blood pressure (BP) kiosks are present in most community pharmacies and are frequently used, yet their role in patient care is not defined. The purpose of this study was to determine the distribution of BP measurements obtained at BP kiosks in community pharmacies to determine the proportion of users who may benefit from pharmacist intervention.

**METHODS:** BP results were obtained from 341 PharmaSmart PS-2000 kiosks between January 2010 and November 2011 from casual users and those enrolled in the SmartCard program (which uses an electronic card to track individual patient BP results). Readings were classified as optimal (<130/80 mmHg), pre-hypertensive (130–139/80–89), uncontrolled (140–159/90–109) or very high ( $\geq$ 160/110). When systolic and diastolic BP fell into different classifications, the higher of the 2 was applied.

**RESULTS:** Of 8,457,552 casual readings analyzed, mean BP was 131/78 (SD 13.7/13.4) mmHg with mean pulse of 76 beats/minute (SD 5.6). Thirty-seven percent of measurements were optimal, 27% pre-hypertensive, 29% uncontrolled and 7% very high. Results from casual users did not differ significantly from SmartCard users. Correlation between heart rate and BP was weak except for diastolic BP among SmartCard users ( $R^2 = 0.77$ ), suggesting that insufficient rest before measurement is unlikely to be responsible for elevated results in most cases.

**DISCUSSION:** Pharmacy-based BP kiosks are used frequently by the public and 2/3 of readings obtained are elevated. This is an untapped opportunity for pharmacists to become involved in the detection of uncontrolled hypertension and provide education and care to patients with the goal of reducing their risk of cardiovascular events.

# Business and patient care opportunities using blood pressure kiosks

*Sherilyn Houle, BSP, Anderson Chuck, PhD, MPH, Ross Tsuyuki, BSc(Pharm), PharmD, MSc, FACC, FCSHP*

- OBJECTIVE:** Most pharmacies have public-use blood pressure (BP) kiosks and we have recently shown that 2/3 of results obtained at these kiosks are elevated. This is a missed public health opportunity and a missed opportunity for remunerable medication therapy management activities for pharmacists. This study estimated potential remuneration obtainable as a result of pharmacists providing care to patients with elevated BP using these kiosks.
- METHODS:** Through economic modeling, we estimated revenues achievable by utilizing BP kiosks to identify a cohort of patients with blood pressure  $\geq 130/80$  mmHg and caring for those patients over 1 year. We used Ontario as the reference population, where pharmacists are reimbursed \$60 for an annual MedsCheck review, \$25 for a follow-up MedsCheck and \$15 for a Pharmaceutical Opinion.
- RESULTS:** A typical pharmacy could identify 189 patients monthly who have elevated BP and qualify for MedsCheck. Of these, 28 would likely require a follow-up MedsCheck within the year and an additional 95 would not be eligible for MedsCheck but could receive Pharmaceutical Opinion intervention. Providing such care for 1 year could generate on average \$12,270 (range \$4,523–\$24,420) annually in revenue as a result of billing for these services for all eligible patients.
- DISCUSSION:** BP kiosks can help identify patients with elevated BP who may benefit from reimbursable cognitive services. Revenues generated can potentially be used to pursue automated dispensing technology or offset the costs of pharmacy technicians to free the pharmacist to provide pharmaceutical care. Improved patient outcomes, increased patient loyalty and improved adherence are additional potential benefits.

# Attitudes of pharmacists in Alberta regarding traditional Chinese medicine and complementary alternative medicine

*Hoan Linh Banh, PharmD, Katie Tam*

- OBJECTIVE:** Pharmacists in Canada are the most widely accessible health care professionals from whom to obtain information on Traditional Chinese Medicine (TCM) and Complementary Alternative Medicine (CAM) products. The purpose of this study is to evaluate the attitudes of practising pharmacists in Alberta with respect to TCM/CAM and assess how prepared pharmacists in Alberta are in providing patient counselling and education on TCM/CAM.
- METHODS:** After receiving approval from the research ethics board at the University of Alberta, an online survey was created using Google Documents. The Alberta College of Pharmacists then distributed the link of the survey to pharmacists registered in Alberta. Informed consent was obtained for all subjects involved before beginning the survey. Data were extracted from the Google Documents and analyzed 3 months from the time the link was circulated.
- RESULTS:** A total of 130 pharmacists completed the survey. Eighty-eight (68%) pharmacists felt that they were not prepared to counsel patients regarding TCM/CAM, while 117 (90%) pharmacists agreed that TCM/CAM should be included in the pharmacy curriculum at the University of Alberta. With regards to the use of TCM/CAM, 24 (19%) pharmacists either disapprove or strongly disapprove of TCM/CAM use, while 26% are neutral and 55% either agree or strongly agree with TCM/CAM use.
- DISCUSSION:** While most pharmacists have a positive attitude towards CAM/TCM, they do not feel prepared to provide counselling/education to patients. It has also been identified that TCM/CAM should be included in the pharmacy curriculum at University of Alberta.

# Improving patient adherence to drug therapy through the PASSAction framework

*Vivian Lee*

**ISSUE:** Medication non-adherence results in poor health outcomes and significant health care costs. According to 2006 data provided by the Canadian Institute for Health Information (CIHI), medication non-adherence led to a cost of \$8 to \$10 billion which correlated to about 140,000 hospital admissions and 35,000 deaths. Factors that have been shown to repeatedly correlate with non-adherence are related to the medication (e.g., regimen complexity), disease (e.g., asymptomatic conditions), patient (e.g., fear of adverse effects) and health care provider (e.g., lack of or poor communication with the patient). Because non-adherence is a complex, patient-specific and multi-factorial problem, multi-faceted approaches instead of single interventions should be considered when attempting to improve patient adherence.

**SOLUTION:** PASSAction is a framework developed to help community pharmacists systematically devise and implement medication adherence strategies individualized for their patients. PASSAction encompasses: P) A description of the Problem or Patient encounter that reflects non-adherence, A) Adherence factors that may have contributed to non-adherence, SS) Set a Strategy based on the identified adherence factors and A) put the strategy to Action.

**IMPLICATIONS FOR PRACTICE:** This framework is currently being applied in an adherence study conducted at the University of Waterloo's School of Pharmacy. The study identifies from the literature that complex administration requirements of oral bisphosphonates are a prominent barrier to adherence among postmenopausal women. Based on the PASSAction framework, the study examines the impact of a multi-faceted approach to educating patients on proper drug administration (consisting of a medication information leaflet, video clip and telephone follow-up) and on patient-perceived adherence to bisphosphonate therapy.