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Pharmacy Experience Pharmacie 2019 was an excellent opportunity for pharmacists from across Canada to network with colleagues and to share new and exciting ideas, research and innovation. The oral and poster pharmacy practice research presentations provided an opportunity for members of the pharmacy community to engage in sessions that promote evidence-based practice and decision-making.

This year's conference research program was built on past successes and explored emerging trends that could enable delegates to apply best practices from dozens of top pharmacy practice research leaders across Canada.

To help promote and disseminate pharmacy practice research, CPhA publishes the abstracts of the research presented at the conference in this special supplement of the *Canadian Pharmacists Journal*.

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The Medication Therapy Services (MTS) Clinic: A preliminary analysis of services and uptake



Deborah Kelly, BSc(Pharm), PharmD; Nicole Pittman, BSc, MSc; Catherine Balsom, BSc(Pharm), PharmD

OBJECTIVES: To describe the characteristics of patients who access services, types of problems identified, and satisfaction with services provided by the MTS Clinic at Memorial University in St. John's, Newfoundland and Labrador (NL).

METHODS: The MTS Clinic provides comprehensive medication therapy assessments to medically complex patients. Patients throughout NL are seen by pharmacists on an appointment basis upon referral from a health provider or self-referral. Services are provided in clinic, using distance technology or home visits. Recommendations are made to primary care providers via letter from the clinic pharmacist and patients are followed up as appropriate. Patient satisfaction is assessed by survey one month later.

RESULTS: Patients who received services at the MTS Clinic have a median age of 69 years and take a median of 11 medications (IQR 7-14). A median of 4 (IQR 2-5) drug therapy problems were identified per patient. Most common problems included "no indication for drug" (25.1%) and "indication for drug not being received" (17.4%). Regardless of the reason for referral, 56% of patients received deprescribing-related recommendation(s). Satisfaction is very high among patients; 96.9% of respondents were very satisfied/satisfied with the service they received and 100% would recommend the service to others. Most frequent suggestions for improvement is to better publicize the service and continue developing ways to increase accessibility of the service to those outside St. John's.

CONCLUSIONS: The MTS Clinic is providing a useful service to the patients it serves. Additional evaluation of services is ongoing. Future development should focus on increasing awareness and accessibility of services.



What unfunded services are being provided in community pharmacy in New Zealand? An investigation of pharmacy provision and patient utilization of non-remunerated services

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OBJECTIVES: There is anecdotal evidence of pharmacists providing free or partially subsidized clinical services in order to meet health care needs of their communities. As there is limited information about such services, this study aimed to (1) Characterize the types of non-reimbursed services and (2) Explore patient views on these services.

METHODS: This mixed-methods study had two parts: (1) semi-structured focus group discussions with community pharmacists across New Zealand; (2) a pilot time-motion study in eight pharmacies in Dunedin. The pilot study also included a structured interview with patients who were identified as having received an unfunded service. All focus groups and interviews were transcribed verbatim. Characteristics of the services were recorded. Recurring patterns and national regional differences in unfunded services were identified.

RESULTS: Twenty-four pharmacists took part in the focus groups across five regions in New Zealand. Eight pharmacies took part in the time-motion study. Key themes identified from focus groups were: "Stand-alone" unfunded services, "Services funded elsewhere" and "Leakages" from the current funding model. Unfunded services accounted for 15%-50% of the daily activities of pharmacists. Pharmacists stated that they believed these services often led to reduction of disease progression, hospitalisations and improved quality of life. The time-motion study found that unfunded services were being provided on a daily basis by various members of the pharmacy team. Patients reported easy and timely access to health care where they would have alternatively presented to their general practitioner or the emergency department. Patients also reported a willingness to pay for such services provided fees are less than those charged by physicians.

CONCLUSIONS: It appears that pharmacists offer many professional services without remuneration. In some cases, these services make up a substantial part of the pharmacist's time. Patients positively rate these services.

Pharmacist perceptions towards their preparedness to participate in medical assistance in dying



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OBJECTIVES: To determine Newfoundland and Labrador (NL) pharmacists' willingness to participate in medical assistance in dying (MAiD) and identify potential barriers to their participation.

METHODS: An online survey was made available to all pharmacists working in NL. The survey was active from May 25 to July 13, 2018. The questionnaire included multiple choice, Likert-scale, and open-ended questions. Information on pharmacist demographics, views towards MAiD, willingness and unwillingness to participate in MAiD, concerns on participation, and perceptions about whether they have the knowledge and skills to participate was collected. Analysis of data was conducted by descriptive statistics for quantitative data and content analysis for open-ended questions.

RESULTS: A total of 176 valid survey responses were received, which represented approximately 24% of pharmacists in NL. Over 80% of respondents were willing (very willing or probably willing) to participate in the following aspects of MAiD: dispense prescriptions (83.6%), provide drug information to physicians (92.6%), and respond to patients' general inquiries (85.8%). Over 60% of respondents felt they lacked knowledge about the MAiD process, oral/IV medications for MAiD, what information to give patients about MAiD, and the knowledge needed to counsel physicians on MAiD medications. Furthermore, 48.3% did not feel competent to prepare MAiD prescriptions for dispensing and only 16.5% of respondents had participated in MAiD education. Approximately 85% were interested in education and felt pharmacists should be required to complete an education program before participating. Between 45-50% of respondents had concerns about liability, emotional impact, unexpected side effects from the medications, and responding to patient inquiries about MAiD.

CONCLUSIONS: Despite the majority of respondents being willing to participate in MAiD there are potential barriers limiting pharmacists' ability and willingness to participate. The survey results suggest additional supports (e.g., educational) need to be developed to assist pharmacists in this new practice area.

A clinical pharmacist in primary care: An opportunity for collaborative care and application of their expanded scope within Canadian Forces Health Services Center (Atlantic)

Marilyn Bernier, BSc; Janet MacMullin, BSc; Adam Calabrese, BSc

OBJECTIVES: To determine the extent to which a pharmacist integrated into the primary care team is being utilized, describe the level of recommendation acceptance by clinicians and the type of service provided.

METHODS: Quantitative data was retrospectively extracted from all patient encounters with the clinical pharmacist for 2 arbitrary months (May 2016 and October 2017). The patient population was military members between the ages of 18 to 60 years. The number of patient encounters, the referral source and the type of visit (initial or follow-up) were used to measure program utilization. The number of recommendations implemented were looked at to assess clinician acceptance. The reason for the appointment was reviewed to determine which pharmacy services were utilized. Patient demographics were evaluated to gauge which patient populations were being seen by the pharmacist.

RESULTS: In May 2016 and October 2017, there were 178 and 126 patients encounters for an average of 8.9 and 6.3 patients per day, respectively; 40% and 33% (May and October) of visits were initial consults and 60% and 67% follow-ups. Physician was the main referral source. Out of the recommendations made by the pharmacist to clinicians (53 and 49), the implementation rate was 98% and 90%. Top 3 reasons for appointment were related to blood pressure (53% and 58%), diabetes (24% and 20%) and prescription renewal (13% and 1%) or smoking cessation (1% and 10%). When categorizing appointments into chronic disease management or expanded scope services, patients were seen more often for chronic disease management (84% and 85% respectively).

CONCLUSIONS: The pharmacist within primary care is being utilized and there is a high level of recommendation acceptance by clinicians. Although the program was initially intended to implement the expanded scope of practice, chronic disease management represents a high percentage of reason for visits.

A preliminary evaluation of an anticoagulation management training program for family medicine residents

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OBJECTIVES: Warfarin is a high-risk medication with the potential to cause significant patient harm if not appropriately managed. However, health care providers skilled in the assessment and adjustment of this drug can positively impact patient outcomes. The purpose of this study was to assess the impact of a pharmacist-led anticoagulation management training program (AMTP) on medical residents' 1) knowledge, skills and confidence in the management of patients on warfarin and 2) their satisfaction with the training provided.

METHODS: A mixed method of evaluation was used with a pre- and post-training knowledge and skills test and a post-training confidence and satisfaction survey. Post-graduate year (PGY) 1 and 2 family medicine residents were recruited to participate in the study. Tests and surveys were administered pre-training and post-training for new trainees of the program. Only the post-training confidence and satisfaction survey was used for trainees who had previously completed the AMTP prior to the start of this study period (April-June 2018).

RESULTS: The response rate was 34.6% (9/26) for both previous and new trainees. For new trainees (n=2), the mean knowledge/skills test scores increased from 61.5% to 86.5% (p=0.05) post-training. In the post-training confidence and satisfaction survey, 77.8% of respondents reported being confident in identifying patients that would benefit from warfarin and 66.7% reported confidence in adjusting maintenance doses of warfarin, with scores of ≥ 5 on a 7-point Likert scale. Seventy-seven percent of respondents reported training with the pharmacist to be a satisfactory learning experience.

CONCLUSIONS: The preliminary results of this small cohort demonstrate family medicine residents are satisfied with a pharmacist-led program and report confidence in managing warfarin following completion of training. Prospective recruitment of subjects is ongoing. Study results will inform initiatives to improve the training program.

A quality improvement project assessing the impact of a pharmacist-led, pre-initiation patient consultation for advanced therapy in inflammatory arthritis

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OBJECTIVES: Patients delay the initiation of biologic/targeted synthetic DMARDs (Advanced Therapies [AT]) for inflammatory arthritis due to lack of knowledge about their disease, treatment effectiveness and fear of adverse effects. The objectives of this QI project were to improve patient confidence/understanding of their disease and treatment options, to evaluate the impact of a pharmacist-led consultation prior to selection of an AT and to reduce time to treatment initiation.

METHODS: AT visit for 75 referred patients included: 1) tour of infusion clinic, demonstration of devices, education on treatments, vaccination recommendations, smoking cessation, medication review, insurance assessment, 2) a regulated pharmacy technician administered a pre-visit, immediate post-visit and 6 month post-visit questionnaire to assess: patient concerns, understanding and confidence of both their disease and advanced therapies, 3) an additional 75, randomly selected, patients with inflammatory arthritis were used as a comparator group for time to AT from diagnosis.

RESULTS: Pre-visit vs post-visit questionnaires demonstrated a 33% increase in understanding of diagnosis, a 187% increase in understanding of how advanced therapies work, a 128% increase in the modified S.U.R.E score with the average score jumping from 1.66 to 3.88. For Time to Treatment the average # of days between date of diagnosis and advanced therapy start day was the same for both referred and non-referred patients. Patients were prescribed their first choice of AT 56% of the time while 11% received their second choice and 7% their third.

CONCLUSIONS: This QI project demonstrated that earlier intervention with a pharmacist prior to selection of an AT significantly improved both patient understanding and confidence of their disease and treatments. The physician's global impression of the program was that the patients referred were chosen based on their reluctance to initiate AT and therefore time to treatment was reduced and patient willingness to initiate an AT was greatly improved after the pharmacist visit.

An assessment of safety culture in Saskatchewan community pharmacy practice

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OBJECTIVES: As the scope of pharmacy practice is expanding, there is a growing interest to measure pharmacy professionals' attitudes on issues that pertain to patient safety as they impact patient outcomes and health care costs. The objective of this study was to explore the current perceptions and attitudes on patient safety culture in community practice by Saskatchewan pharmacy professionals.

METHODS: We administered a 40-item online questionnaire, which was adapted from a validated Safety Attitude Questionnaire (SAQ) with six domains that could influence safety culture, to all 1262 registered pharmacy professionals in Saskatchewan. We conducted descriptive statistics and qualitative thematic analysis on the responses collected.

RESULTS: We collected 230 responses (210 pharmacist respondents and 20 pharmacy technician respondents) with an overall response rate of 18.23%. Pharmacy professionals had a fairly positive perception of safety culture in community practice overall, scoring especially high in the domains of teamwork and safety culture. However, there was a concern with the level of staffing and inadequate training and supervision of new pharmacy personnel at the workplace, particularly regarding the integration of recently-graduated pharmacy professionals. As well, pharmacy morale was inconsistently perceived by pharmacy professionals and varied depending on the type of pharmacy they worked in. Of the six domains in the SAQ, working condition was scored the lowest by community pharmacy professionals.

CONCLUSIONS: Although perception of safety culture in community practice is generally positive, the results of the SAQ show that there are still factors that generate discontentment from pharmacy professionals. Resolution of these barriers would contribute to a more robust safety culture within community practice, and ultimately, improve the delivery of patient care.

Applying the Consolidated Framework for Implementation Research to a deprescribing intervention in community pharmacies in Ontario

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OBJECTIVES: Deprescribing of potentially inappropriate medication use by pharmacists has beneficial impacts on patient health, but a feasible implementation model for deprescribing has not been identified within community pharmacy settings. Our study aimed to identify the barriers and facilitators to deprescribing in community pharmacy using an implementation research approach.

METHODS: We undertook a retrospective qualitative deductive analysis that involved mapping data from the Catalyst deprescribing study onto the Consolidated Framework for Implementation Research (CFIR) to present individual and overall summaries for four pharmacies using the five CFIR domains.

RESULTS: The domain for Intervention Characteristics showed that evidence-based tools and algorithms were useful to pharmacists but that the complexity of implementation was a challenge to deprescribing. The Outer Setting domain found that a lack of and ineffective communication between physicians and pharmacists was a barrier, although there was positive peer pressure to deprescribe between pharmacies. The Inner Setting domain showed that when pharmacists took the time to build rapport with patients, it often influenced the patient's awareness of and interest in deprescribing; however, team cohesion and other priorities within the pharmacy were major barriers. Pharmacists expressed a strong interest to incorporate deprescribing into their pharmacy workflow in the Characteristics of Individuals domain, but needed a leader within the pharmacy to push forward deprescribing efforts. Education and engagement of pharmacy team members and patients were facilitators in the Process domain.

CONCLUSIONS: Future research should seek to evaluate the effectiveness of these barriers and facilitators to deprescribing as a part of routine clinical practice in community pharmacies.

Are we there yet? Uptake of travel health services by community pharmacies and patients following pharmacist immunization scope expansion in Ontario, Canada

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OBJECTIVES: In December 2016, the scope of pharmacist-administered immunizations expanded to include 13 vaccine-preventable diseases in addition to the influenza vaccine — many of which are travel-related. It is unknown whether this scope expansion would be embraced by community pharmacists or advance travel health services within community pharmacies. This study examined travel health services in Ontario community pharmacies following this scope change in order to determine the initial impact of this legislative modification on pharmacy practice and patient care.

METHODS: This mixed-methods study collected quantitative data through surveying Part A community pharmacists practising in Ontario. This was followed by conducting qualitative interviews. Survey Results were analyzed using descriptive statistics, and interviews were analyzed using a qualitative modified thematic approach.

RESULTS: A total of 178 pharmacists (n=205) completing the survey were authorized to administer injections. The majority reported (78%) that they administer travel vaccines (defined as all vaccines currently within scope other than influenza), and 88% reported charging a fee, most commonly \$20. However, 94% report administering fewer than 10 of these vaccines per month. Interviewees (n=6) identified the following barriers: the inability to prescribe, the need for additional knowledge and skills in travel medicine, patient unawareness of pharmacists' scope, and the lack of remuneration for vaccination services.

CONCLUSIONS: A multi-pronged approach is required to address low uptake of these services, such as further legislative expansion to include prescribing authority, additional training opportunities in travel medicine, enhanced funding for immunization services, and support in navigating the business aspect of travel medicine.

Attitudes towards deprescribing of older patients and caregivers: A survey in Quebec, Canada

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OBJECTIVES: Polypharmacy is frequent among older adults, and deprescribing represents a concrete way for pharmacist to help reduce overmedication. To be successful, deprescribing interventions require older adults and their caregivers to be involved in the process, but knowledge on their perceptions of deprescribing remain limited. We thus aimed to describe attitudes about deprescribing among older adults and caregivers.

METHODS: We performed a survey among adults 65 years and older and caregivers of older adults using a French version of the Revised Patients' Attitudes towards deprescribing questionnaire. We recruited older adults using medications for at least three months, and caregivers for older adults with similar characteristics, through community pharmacies, community centers, institutions for independent elders and social associations in Quebec, Canada. The participants rated their agreement on statements about polypharmacy or deprescribing on a 5-point Likert scale. We used descriptive statistics to describe the population and the proportions of responses.

RESULTS: A total of 110 older adults were included (mean age: 75 [SD:7.2]); 63% were women and they were using a mean of 4.6 medications (SD:3.6). Among the 95 caregivers, 75% were women (mean age: 69 [SD:9.7]); the elders they cared for were 80 years old (SD 8.4) and used a mean of 6.3 (SD:3.9) medications. A proportion of 84.5% of older adults indicated that they would be willing to stop one or more of their medication if the doctor said it was possible, while this proportion was 70.5% for caregivers. Conversely, 59.0% of older adults would be reluctant to stop a medicine that has been taken for a long time, while 54.7% of caregivers would be reluctant.

CONCLUSIONS: Both older adults and caregivers are eager to undertake deprescribing, but some barriers have to be addressed. There is a strong opportunity for pharmacists to fully engage in deprescribing activities and to address those barriers.

Barriers to a full scope of primary care pharmacy practice: A review of pharmacists' access to laboratory testing

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OBJECTIVES: To describe primary care pharmacists' current scope of practice in relation to laboratory testing within Canada, USA, UK, New Zealand and Australia.

METHODS: A two-tiered search of key databases (PUBMED, EMBASE, MEDLINE) and grey literature with the MeSH headings: prescribing, pharmacist/pharmacy, laboratory test, collaborative practice, protocols/guidelines.

RESULTS: There is limited literature exploring primary care pharmacists' scope of practice in relation to laboratory testing. Most publications were from the USA (18) and Canada (12), the remainder from the UK (2) and New Zealand (1), and none from Australia (0). We compared primary care pharmacists' scope of practice in relation to laboratory testing within the five reviewed countries. Some Canadian pharmacists can access and/or order laboratory tests independently or dependently, depending on the province they practice in. USA pharmacists can access and/or order laboratory tests dependently within collaborative practice agreements. In the UK, laboratory testing can be performed by independent prescribing pharmacists or dependently by supplementary prescribing pharmacists. New Zealand prescribing pharmacists can perform laboratory testing independently. Given the lack of literature in Australia, Australian pharmacists appear to have no or very limited access to laboratory testing. The majority of publications do not report the types of laboratory tests utilised by pharmacists. However, those that do predominantly resulted in positive patient outcomes, such as a reduction in CVD risk, improved glycaemic and lipid control, and uncovering unrecognised CKD.

CONCLUSIONS: Primary care pharmacists' scope of practice in laboratory testing is presently limited to certain jurisdictions and is often in a dependent fashion. Just as the case for pharmacists prescribing, evidence indicates better patient outcomes when pharmacists can access/order laboratory tests. Patients around the world deserve to receive a full scope of pharmacist practice, but a lack of access to laboratory testing is one of the major obstacles to this.

British Columbia Telehealth pharmacists' electronic adverse drug reaction reporting to Health Canada

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OBJECTIVES: The primary objective was to determine the number of adverse drug reaction (ADR) reports electronically submitted to Health Canada by the British Columbia (BC) Telehealth pharmacist team for the years 2015 to 2017. The secondary objectives were to: 1. Determine the proportion of BC Telepharmacist ADR reports to all BC pharmacists and all Canadian pharmacists and 2. Describe factors that influence Telehealth pharmacist ADR reporting.

METHODS: Following training from the Canada Vigilance BC Regional Office in 2013, BC Telehealth pharmacists identified ADRs while providing consultations via the 8-1-1 health advice line from 1700-0900 H, 365 days per year. A team of up to 18 pharmacists submitted ADR reports electronically via the Health Canada website. Data collected included: pharmacist name, date of report, suspected drug, ADR, and an identifier code for corresponding call documentation. Excel spreadsheets were utilized for data collection and analysis. Canada Vigilance BC provided the data on Canadian and provincial ADR reporting by pharmacists. In 2018, the telehealth pharmacists completed a brief anonymous on-line survey addressing factors that may influence pharmacist ADR reporting.

RESULTS: The BC Telehealth pharmacist team submitted 995, 517, and 598 ADR reports in 2015, 2016 and 2017 respectively. The proportion of telehealth pharmacist reporting to BC pharmacist reporting was 73 % in 2015 (BC 1,1), 66 % in 2016 (BC 789), and 79 % (BC 760) in 2017. Compared to pharmacist ADR reporting in Canada (CA), BC Telehealth pharmacists reported 33% (3043 CA), 20 % (2581 CA) and 25% (2374) in 2015, 2016 and 2017 respectively. Telehealth pharmacist survey responses for barriers to ADR reporting included slow website speed, perceived lack of importance in ADR reporting, and questionable value of reporting known ADRs.

CONCLUSIONS: The BC Telehealth pharmacist team reported the majority of ADRs in BC, and 20-33% of all ADR reports by pharmacists in Canada.

Community pharmacist identification of chronic kidney disease (CKD) using point-of-care technology: A pilot study

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OBJECTIVES: Chronic kidney disease (CKD) is common, affecting about 10% of the Canadian population, and is often under-diagnosed and under-treated in the community. Therefore, we conducted a pilot study to inform a full scale trial of the use of point of care technology (PoCT) by pharmacists to identify CKD.

METHODS: Pilot study conducted in a single community pharmacy located in Ontario. We included patients at high risk for CKD (i.e., hypertension, diabetes, vascular disease, multisystem disease with potential kidney involvement and a family history of kidney disease) and patients with CKD (secondary outcome). Eligible patients were screened, following the CKD Targeted Screening Guidelines (<https://ckdpathway.ca>). Creatinine was measured using a PoCT device (StatSensor®), with CKD defined as having an eGFR of <60 mL/min/1.73 m².

RESULTS: Over a 6-week period, 108 potential participants were approached for enrolment, of whom 89 consented to take part in the study. Of the 89 participants, we found that 10 (11%) had CKD and of those, 9 (90%) had previously unrecognised CKD. Based upon this, a full scale study of 520 patients would take 9 months to complete using a single pharmacy.

CONCLUSIONS: We demonstrated that a full-scale PoCT CKD screening trial in a community pharmacy is feasible. Our pilot study uncovered a high proportion of undiagnosed CKD. Pharmacists can play a major role in the detection of CKD, often otherwise undiagnosed. This has important implications for prognosis, cardiovascular risk, and medication dosing and is an important component of a full scope of pharmacy practice.

Community pharmacy influenza immunization services in Ontario

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OBJECTIVES: Influenza is an important public health concern, particularly among young children, older adults and immunocompromised patients. Since 2012, community pharmacies have been reimbursed to administer influenza immunizations to residents aged 5 years or older with a valid Ontario health card. The objective of this study was to describe use of community pharmacy influenza immunization services in Ontario over time and by region defined based on Local Health Integration Network (LHIN).

METHODS: We identified all intranasal and injectable influenza immunization services claimed by community pharmacies from program launch to March 2018 using data housed at ICES. The mean number of claims were summarized overall, by influenza season (October-March), and by LHIN. Census data were used to adjust community pharmacy immunization rates for population size (ages 5 or more years) within each LHIN.

RESULTS: A total of 5,979,333 immunizations were completed for 2,634,870 patients. The community pharmacy immunization rate increased over time (2012: 19.4/1000 persons, 2013: 59.5/1000 persons, 2014: 69.4/1000 persons, 2015: 66.3/1000 persons, 2016: 76.1/1000 persons, 2017: 88.8/1000 persons). Most immunizations were completed in November each season (52.6% overall; monthly mean=429,653, SD=176,748). Eastern areas had the highest community pharmacy immunization rates (e.g., 123.8/1000 persons in Champlain in the 2017 influenza season), while central densely populated regions had the lowest (e.g., 46.5/1000 persons in Central West and 67.8/1000 persons in Mississauga Halton in the 2017 influenza season).

CONCLUSIONS: Community pharmacy immunization services are common in Ontario, yet significant regional variation was identified.

Completion of multiple-dose travel vaccine series and the availability of pharmacist immunizers: A retrospective analysis of administrative data in Alberta, Canada

Sherilyn Houle, BSP, PhD, CTH; Dean Eurich, BSP, MSc, PhD

- OBJECTIVES:** Pharmacists have demonstrated improved immunization rates for the annual influenza vaccine; however, it is unknown whether the accessibility of pharmacists as immunizers will also translate to improved adherence to multiple-dose travel vaccine series. This study assessed population-level adherence to multiple-dose travel vaccines, and whether the availability of pharmacist immunizers is associated with adherence.
- METHODS:** Health administrative data from Alberta from April 2008 to May 2017 identified adults dispensed at least one vaccine for hepatitis A, hepatitis B, Japanese encephalitis, or rabies. Individuals were coded as completers or non-completers of the vaccine series based on the number of doses dispensed over a time period comprising the duration of the standard series plus 6 months to account for late doses. The association between the proportion of Alberta pharmacists with injection authorization and completion of vaccine series was assessed using linear regression.
- RESULTS:** Over the study period, 24,164 patients initiated a vaccine series for hepatitis A monovalent, 195,480 for hepatitis B monovalent, 169,802 for hepatitis A & B combination, 1,726 for Japanese encephalitis, and 1,908 for rabies. There were fewer than 5 individuals receiving Japanese encephalitis vaccine per year from 2008-2010 or rabies vaccine from 2008-2009. While statistically significant positive associations were seen across all vaccines except for Japanese encephalitis, the magnitude of these associations was small. Each 1% increase in the proportion of injections-authorized pharmacists saw a corresponding increase in the proportion of individuals with completed vaccine series by 0.31% for hepatitis A monovalent, 0.19% for hepatitis B monovalent, 0.22% for combined hepatitis A&B, and 0.21% for rabies.
- CONCLUSIONS:** The availability of pharmacist immunizers alone is associated with small increases in completion of travel vaccine series, suggesting that challenges remain with implementing reminder systems to ensure adherence. Strategies to develop or improve patient and clinician reminder systems in pharmacies for travel vaccines should therefore be explored.

Comprehensive medication management in patients with Parkinson's disease by pharmacists: A single-armed, retrospective cohort study

Jillian Reardon, BSc(Pharm), PharmD, ACPR; Kane Larson, BSc(Pharm) candidate; Jason Min, BSc(Pharm); Larry Leung, BSc(Pharm), RPh; Anita Kapanen, PhD

OBJECTIVES: To characterize patients with Parkinson's disease (PD) being cared for at a pharmacist-led, primary care clinic and quantify pharmacist interventions.

METHODS: A retrospective review of patients with PD who were assessed by a pharmacist at the UBC Pharmacists Clinic (the Clinic) from November 12, 2013 to July 31, 2018 was conducted. Data was extracted for key characteristics such as chief complaint, demographics, prescription and non-prescription medications, drug therapy problems, pharmacist recommendations, and pharmacist actions to resolve drug therapy problems. Data from both initial consultations and follow-up visits was included.

RESULTS: A total of 131 PD patients self-referred or were referred by a health care provider for pharmacist assessment over the study period. Patients were taking a mean of 5.8 prescription and 3.2 non-prescription medications. During initial consultations, the most common chief complaint was related to PD management (38%) and the most common pharmacist recommendation was related to adjustment of dopaminergic medications to improve motor symptom control (37%). Within a 16-month period, pharmacists identified 165 drug therapy problems, equating to an average of 1.3 per patient. Approximately 41% of patients lived outside of the Metro Vancouver District Region, where the Clinic is located, representing the geographic diversity of patients seeking care outside of their usual care environment.

CONCLUSIONS: Patients with PD seeking pharmacist consultation were complex due to volume of medications and presence of drug therapy problems. PD patients are likely to benefit from in-depth, consultative services from pharmacists.

Drug utilization among frail elderly residing in long-term care homes in Quebec: Can pharmacists reduce polypharmacy?

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OBJECTIVES: In Canada, almost 40% of individuals 85 years old or over use 10 drugs or more. This proportion is 60.9% for residents of long-term care (LTC) homes. The risk of adverse effects increases with the number of drugs. Pharmacists, in collaboration with health care teams, can improve drug utilization. Our objective was to evaluate if pharmacist work time is associated with reduced polypharmacy in LTC.

METHODS: We performed a cross-sectional study on all permanent residents pharmacy records in 30 LTC homes in Quebec city, Canada. People had to be ≥ 65 years old and receiving at least one prescription on the first or second day of February 2017 to be included. We used Poisson regression mixed models to measure the association between pharmacists' work time and the number of drugs used per resident.

RESULTS: We included 1880 residents: 593 (31.5%) men; mean age was 85 years old; 34.8% had a diagnosis of dementia as the main reason for LTC admission; mean duration of stay was 3.2 years. The mean number of different drugs used on a single day was 8.5, including as needed drugs. The majority of residents received 5-9 drugs (35.3%) or 10-14 drugs (35.3%) with 10.3% receiving ≥ 15 drugs. Among the 30 LTC homes, mean number of residents was 94 and mean number of pharmacist work time per resident per week was 5.6 minutes. Pharmacists' work time per week was significantly associated with the mean number of drugs per resident (adjusted rate ratio: 0.305; 95% confidence interval: 0.20-0.46).

CONCLUSIONS: The number of drugs used by frail elderly in LTC homes in Quebec is high. Pharmacist work time is associated with reduced polypharmacy. Our Results suggest that an additional 6.7 minutes per resident per week is needed to reduce polypharmacy from a mean of 8 drugs to 7.

Evaluation of pharmacist care planning services in Alberta using the framework for the implementation of services in pharmacy

Christine Hughes, PharmD; Theresa Schindel, PhD; René Breault, PharmD

OBJECTIVES: Remuneration for care planning services provided by pharmacists was implemented in Alberta in 2012. The Objectives of this study were to characterize how care planning services are implemented by pharmacists in community practice and identify factors influencing implementation.

METHODS: This qualitative study utilized a longitudinal, multiple-case study approach. Purposive sampling was used to identify 4 community pharmacy sites selected based on practice context, location, and services provided. Data collection methods included semi-structured interviews of pharmacists, registered pharmacy technicians and other pharmacy staff, health care providers, and patients, observation, and documents. Interviews were audio recorded and transcribed verbatim. An inductive, constant comparison approach was used to analyze data. The Framework for the Implementation of Services in Pharmacy was applied to compare implementation processes and strategies between sites.

RESULTS: A total of 77 interviews were conducted, 61 site-specific documents and 94 hours of observation data were collected between May 2016 and January 2018. Within the stages of implementation (exploration, preparation, operation, and sustainability), pharmacists performed a range of activities which varied considerably between sites. Common strategies used to implement care planning services included software adaptations, task shifting, and organizational changes. Implementation strategies evolved as pharmacists learned from experience with the care planning services. At 1 site, remuneration for care planning services supported practice innovation and sustainability (integration into routine practice with supportive environment). Factors influencing implementation included internal context and practice setting, individuals involved, and characteristics of the care planning service (e.g., adaptability and complexity).

CONCLUSIONS: Implementation strategies used by pharmacists to integrate care planning services into community pharmacy practice were varied and changed over time. Framework analysis was a useful approach to evaluate implementation of new compensated pharmacy services. These findings will be useful to researchers, pharmacy managers and owners, and policy makers when implementing similar services.

Extracting data from electronic medical records: A forward-thinking approach for pharmacists to utilize their data in community practice

Jason Min, BSc(Pharm); Jamil Devsi, PharmD (candidate)

OBJECTIVES: As the scope of pharmacy practice evolves to necessitate greater use of Electronic Medical Records (EMRs) as a critical enabler for patient care, efficient and effective data extraction remains an elusive reality in primary and community settings. Currently available data extraction Methods are expensive, require pharmacist understanding of databases, and are time-intensive due to outsourcing to technology professionals. Development of a database query generator is an innovative, systems-based solution that could meet the needs of current and future pharmacist practice.

METHODS: Over an 18-month period we conducted a scoping review of EMR database extraction techniques and a naturalistic inquiry focusing on clinical workflow and data needs at a pharmacist-led primary care site (UBC Pharmacists Clinic). Using an iterative approach to software design, we developed a prototype application to interface with the OSCAR EMR and evaluated it for usefulness, speed and usability.

RESULTS: Eleven participants volunteered in the study and completed a validated, digital health literacy score, a system usability score, a simulated data extraction activity, and qualitative feedback questions. Participants overall scored better than expected, with 64% of participants successfully completing data extraction within 12 minutes, rating the usability as “okay” (57/100 on the System Usability Scale), and most (64%) agreed or strongly agreed that they would use this method of data extraction in practice. One limitation identified was the need for clearer instructions and training of the application and OSCAR EMR.

CONCLUSIONS: Efficient and effective data extraction from EMRs is a growing need as pharmacist scope of practice expands to incorporate use of electronic clinical documentation systems. Community pharmacists are ill-prepared to incorporate and maximize their use of data particularly within EMRs and this application offers one possible solution. The impact of better data utilization could include improved care practices, patient outcomes, and business models.

Frailty awareness and assessment: Exploring the link between pharmacists' beliefs and behaviours

Brittany Cook, BSc, PharmD (candidate); Yanling Guo, MSc; Nardine Nakhla, PharmD; Mina Tadrous, PharmD, PhD; Colleen J. Maxwell, PhD

OBJECTIVES: To examine associations between pharmacists' beliefs and behaviours regarding frailty.

METHODS: We distributed a survey to Canadian pharmacists across Canada to assess their knowledge, perceptions and practices of frailty and frailty assessments. We used descriptive statistics to describe the survey respondents. Our outcome of interest was pharmacists' beliefs and behaviours with regards to frailty. We used a logistic regression to assess the correlation between relevant covariates with our outcome of interest. This research is funded by Canadian Frailty Network (Technology Evaluation in the Elderly Network), which is supported by the Government of Canada through the Networks of Centres of Excellence program.

RESULTS: Our survey was completed by 349 pharmacists across 10 provinces. Eighty percent of respondents (n=279) agreed that it is important for a pharmacist to know a patient's frailty status, while 56% agreed that it is important for a pharmacist to assess a patient's frailty status. Only 36% of pharmacists reported that they currently assess frailty. Findings from the multivariable regression model show that relative to pharmacists working only in community pharmacy, those who also practice in a hospital / long-term care or other setting were significantly more likely to have positive beliefs about frailty and to also assess frailty ($p < 0.05$). Factors associated with increased likelihood of holding positive beliefs and behaviours were having a geriatric-related certification, working with more physically or cognitively impaired patients. Inversely, factors associated with negative associations were having other certifications (not geriatric-related).

CONCLUSIONS: Pharmacists across Canada strongly agreed that community pharmacists should understand frailty. Only a third of pharmacists reported incorporating this into their practice. Our findings suggest the importance of diverse experience and/or training in the care of older patients.

Identification of barriers and facilitators to follow-up for people with diabetes by community pharmacists

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OBJECTIVES: Routine monitoring and follow-up is critical in the medication management of chronic diseases. An evaluation of the Ontario MedsCheck Diabetes program demonstrated that almost 50% of the population with diabetes received an initial medication review in the first 3.5 years of the program. However, follow-up assessments were low (3 %). The objective of this research was to identify the barriers and facilitators to follow-up for people with diabetes by community pharmacists.

METHODS: An online survey was designed using the Theoretical Domains Framework version 2 TDF(v2), and then tested for clinical sensibility and face validity with 8 community pharmacists. Pharmacists from across Canada were invited to participate using the Diabetes Pharmacists Network and Ontario College of Pharmacists databases using the Lime Survey tool. Baseline information about the respondents and their practice sites was summarized using descriptive statistics. A mean score and standard deviation was calculated for each of the TDF domains. An inductive thematic analysis was completed on the responses to open-ended response questions.

RESULTS: Of the 7270 pharmacists invited, 346 (4.8%) pharmacists completed the survey. Beliefs about consequences for people with diabetes, pharmacist knowledge, pharmacist skills, social influences and optimism were the strongest positive influences on follow-up. Reinforcement and the environmental context/resources were the strongest negative influences. The following themes emerged as both facilitators and barriers in the qualitative analysis: time of the pharmacist, patient engagement, reimbursement, workflow, staffing, competing priorities, access to labs/clinical data. There were 7 additional themes identified as facilitators that emerged.

CONCLUSIONS: Reinforcement and the environmental context/resources are the greatest negative influences to follow-up by community pharmacists for people with diabetes. Strategies to improve follow-up should be focused in these areas.

Identifying the ideal moment to deprescribe statin treatment: A systematic review

Bianca Rakheja, BSc(c), MD (candidate); Caroline Sirois, BPharm, MSc, PhD

OBJECTIVES: Statin deprescription represents a tangible practice for pharmacists to approach the issue of polypharmacy in older adults. However, the circumstances in which statin deprescription is justified in the older population are rather obscure. We therefore carried out a literature review to determine said circumstances in both primary and secondary prevention.

METHODS: We consulted PubMed, Embase and Google in June 2018 using the keywords: statin, primary prevention, secondary prevention, deprescription, discontinuation, elderly and polypharmacy. The search targeted documents that regard the over 65 population (population), statin deprescription in either primary or secondary prevention (intervention), the continuation versus the cessation of treatment (comparator) and the effects of the intervention (quality of life and risk of interactions, side effects and cardiovascular events) (outcome). Articles published in the past ten years were eligible, whereas case studies and those addressing other indications of treatment (e.g., familial hypercholesterolemia) were not. The reference sections of the eligible articles were consulted in order to identify other pertinent sources. All applicable information was extracted into a table conducive to a narrative synopsis of the evidence.

RESULTS: The search generated 78 potentially eligible titles, 33 of which were retained. Over 80% of the articles were literature reviews and the remaining portion represented expert opinions and editorials. In addition, over 90% of the articles did not provide concrete recommendations for statin deprescription. Authors emphasized the lack of evidence to support clinical decisions at an advanced age (≥ 75) because this population is poorly represented in the existing clinical trials.

CONCLUSIONS: There is no consensus for a critical age or circumstances in which statin deprescription are justified given the lack of evidence. However, certain conditions such as low cardiovascular risk, limited life expectancy and severe side effects seem to favour deprescription. Chronological age can encourage pharmacists to re-evaluate treatment while considering patient characteristics and the benefit-to-risk ratio.

Impact of a pharmacist-led workplace wellness program on work productivity losses and associated risk factors

Barbara Gobis, BSc(Pharm), RPh, ACPR, MScPhm, PCC; Wei Zhang, MM, MA, PhD; Larry Lynd, BSP, PhD; Peter Zed, PharmD

OBJECTIVES: This study measures work hour losses (WHL) of UBC employees in a pharmacist-led wellness program, and assessed associated risk factors.

METHODS: Subjects were healthy, with a Framingham Risk Score (FRS) >10% or 1+ medication-modifiable cardiovascular risk factor. Exclusion criteria were <18 years old or unavailable for follow-up. Baseline data and final data were collected between Sep/15 and Oct/16 and after 12 months of standardized pharmacist service respectively. Measurements included FRS, Body mass Index (BMI), physical activity, Valuation of Lost Productivity (VOLP) and EuroQuol EQ-5D health-related quality of life (HRQoL). A generalized estimating equation regression model for repeated measures was used to identify risk factors and the association between risk factors and total WHL.

RESULTS: Subjects were 50 years of age on average, female (53%) and with sedentary work styles (71%). Pharmacist service improved FRS, Body Mass Index, physical activity, HRQoL and WHL measures. Clinical Results have been reported elsewhere. Subjects with baseline (n = 208) and endpoint (n = 166) VOLP data had average WHL over the prior 3 months of 55.54 and 25.42 hours respectively. Using the self-reported \$33/hour average wage, pharmacist service was associated with a 30 hour (\$994) decrease in lost productivity over 3 months. Men with sedentary/standing work styles lost 2.7 times (1.34-5.43) as many work hours as men with lifting work styles. A per-unit increase in BMI was associated with a 9% (3%-16%) higher WHL and a per 0.1-unit increase in HRQoL was associated with a 30% (9%-46%) lower WHL. Among women, older age and higher HRQoL were associated with fewer WHL (ratio=0.97 (0.94-1.00), 0.75 (0.62-0.91), respectively). The association between FRS and WHL was not significant for men or women in the final multivariate models.

CONCLUSIONS: WHL can be reduced by a pharmacist-led workplace wellness program and gender differences exist between WHL and associated risk factors.

Impact of pharmaceutical interventions in hospitalized patients: A comparative study between clinical pharmacist and explicit criteria

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OBJECTIVES: Pharmaceutical interventions (PI) defined as “any activity undertaken by the pharmacist which benefits the patient”- could prevent patients’ harm related to prescribing errors. The objective of this study was to compare the impact of PI between those detected or not by the explicit tool PIM-Check.

METHODS: A cohort retrospective study was conducted in hospitalized patients. PI based on pharmacist standard examination and accepted by physicians were classified in two groups: detected or not detected by PIM-Check. The impact of the PI stratified by groups were assessed using CLEO (CLinical, Economic, and Organizational) tool. A qualitative analysis was conducted to identify the types of PI that PIM-Check failed to detect.

RESULTS: The study was performed on 162 patients with a median age of 68 years (IQR:46-77) and a median hospital stay of 5 days (IQR:4-7). The pharmacist generated 1.9 PI/patient (n=304) with 31% of them detected by PIM-Check. The acceptance rate of PI was 84% (n=255). Among the accepted PI, 53% (n=136) had a clinical impact graded $CL \geq 2C$ (moderate or major) and the majority of them were not detected by PIM-Check (63%, i.e., 86 among the 136 PI). In addition, 46% of accepted PI (n=117) were associated with a cost decrease, among which 62% were not detected by PIM-Check (73 among the 117 PI). Regarding the care process, 38% of accepted PI (n=98) had no impact on the organization. The qualitative analysis shows that among the PI with a significant clinical impact that were not detected by PIM-Check (86 PI graded $\geq 2C$), 59% were related to dose adjustment, over-prescribing and therapy monitoring.

CONCLUSIONS: A significant proportion of PI with significant clinical impact were not detected by the explicit tool. To increase the detection rate of PIM-Check, criteria related to dose adjustment, over-prescribing and monitoring should be added.

Impact of pharmacist-led medication assessments on opioid utilization

*Derek Jorgenson, BSP, PharmD, FCSHP; Hisham Bhimji, BSP (candidate);
Eric Landry, BSP, ACPR, MSc (candidate)*

OBJECTIVES: Little is known regarding the impact of Canadian provincially funded medication assessment programs on opioid safety and utilization. The objective of this study was to determine the impact of pharmacist-led medication assessments on opioid utilization in ambulatory patients within the primary health care system in Saskatchewan.

METHODS: This was a retrospective chart audit of patients referred to the Medication Assessment Centre (MAC), which is a patient care teaching clinic located at the University of Saskatchewan that provides medication assessments following the policies and procedures of the provincially funded Saskatchewan Medication Assessment Program (SMAP). Patients referred to the MAC during the 2017 calendar year who were taking an opioid at the initial appointment were included. Chart data were extracted in August 2018 and opioid utilization at the initial MAC visit was compared with opioid utilization at the final patient appointment after the medication assessment was complete. Any changes to opioid utilization not directly linked to pharmacist recommendations were not included in the analyses.

RESULTS: Of the 129 patients referred to the MAC during the study period, 28% (n=36) were taking an opioid and were included. Mean age was 59.8 years and patients were taking a mean of 15.2 different medications (including opioids and non-opioids) at baseline. The most common opioids utilized were hydromorphone (42%), codeine (33%) and tramadol (17%). The most common indications for opioid use were unspecified chronic pain (56%), migraine (11%) and fibromyalgia (6%). Mean morphine equivalent doses were reduced from 129.7 mg per patient at baseline to 108.2 mg per patient ($p=0.043$) as a direct result of the medication assessments. Utilization of adjunctive pain medication (i.e., acetaminophen, non-steroidal anti-inflammatories, duloxetine) were also increased.

CONCLUSIONS: Pharmacist-led medication assessments provided according to policies and procedures of the provincially funded SMAP resulted in statistically significant and clinically important reductions in opioid utilization among current opioid users.

Impact of the October 2016 policy change on the delivery of MedsCheck annual and MedsCheck diabetes services in Ontario community pharmacies

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OBJECTIVES: MedsCheck (MCA) is a community pharmacy-led annual medication review service funded since April 2007 for residents with a valid Ontario healthcard taking 3+ medications for chronic conditions. In September 2010, MCA was expanded to include follow-up services and all patients with diabetes (MCD). Documentation requirements changed October 1, 2016, adding several components to the services. The objective of this study was to estimate the impact of the 2016 policy change on the number of MCA and MCD services delivered in community pharmacies.

METHODS: We identified all MCA and MCD services claimed from program launch to November 2018 using pharmacy claim administrative data housed at ICES. Interrupted time series analysis (segmented linear regression) was used to examine the impact of the October 2016 (intervention date) policy change on the monthly number of services delivered, accounting for seasonality, non-stationarity, and autocorrelation.

RESULTS: Since program launch, 2,684,142 patients received an MCA and 672,006 received an MCD. The monthly number of services were stable over the two years before the policy change with an average of 78,072 (SD=6,182) MCA and 26,268 (SD=2,471) MCD. Immediate decreases in delivery of both services (-50.2% [95%CI:-55.8,-44.6] MCA, -74.5% [95%CI:-80.2,-68.8] MCD) were identified in the first month of the policy change with regional differences identified (range from -55.7% South East to -44.5% North West for MCA; and from -78.1% Central to -65.4% North West for MCD). Gradual increases in the number of services delivered were seen over 24 months after policy change (slope of 1.54% MCA and 1.05% MCD), yet remained lower than before the policy change (monthly mean 2017/04-2018/11=46,534 [SD=4,414] MCA, 9,606 [SD=1,149] MCD).

CONCLUSIONS: Substantial decreases in delivery of MCA and MCD were seen after the 2016 policy change. Better understanding of how major policy changes impact the delivery of medication management services by pharmacists is needed.

Incidents associated with centralized automated processing of multi-medication compliance packs

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OBJECTIVES: Studies have found that manual preparation of multi-medication compliance packs is associated with significant risk of medication incidents. Centralized automated prescription processing is a future trend in pharmacy. The objective of this study was to characterize and analyze medication incidents associated with automated preparation of compliance packs at a centralized prescription filling facility in Canada.

METHODS: We performed descriptive statistics and qualitative thematic analysis on incidents associated with nine automated compliance pack preparation machines (i.e., robots) reported by pharmacy professionals at the centralized filling pharmacy from December 2017 to January 2018.

RESULTS: A total of 121,250 compliance packs containing 838,358 prescriptions were prepared during the study period. Pharmacy professionals discovered 5,733 incidents affecting 4.73% compliance packs. This corresponds to a prescription incident rate of 0.68%. The most common types of incidents were dose transition (19.3%), additional dose (18.6%), and omission of medication (16.0%). Incidents were categorized into three main themes: manual processes, robot calibration, and sanitary practices. Recommendations included automation of human-involved processes, review of current policies and procedures, education/training of staff, and fine-tuning of machine/robot performance.

CONCLUSIONS: We found a 33% reduction in incident rates with centralized automated processing of compliance packs when compared to what was reported for manual preparation in the literature. Areas of improvement in a centralized automated prescription filling pharmacy should focus on reducing human errors, improving robot function, and enforcing staff compliance with standard operating procedures.

Management of uncomplicated UTI by community pharmacists in Canada: Cost-effectiveness and budget impact analysis

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OBJECTIVES: To assess the cost-effectiveness and the budget impact of community pharmacist-initiated treatment of uncomplicated urinary tract infection (uUTI) compared to general or emergency physicians.

METHODS: A decision analytic model was developed to estimate costs and quality-adjusted-life-months (QALMs) over a one-month time horizon. The model inputs on clinical outcomes, utilities, and costs were derived from published sources. The outcomes measured were average costs, QALMs, and incremental cost-effectiveness ratios. In addition, we estimated the budget impact of adopting community pharmacist-initiated uUTI treatment Canada-wide. We conducted this study from the perspective of the public health care system of Canada.

RESULTS: Community pharmacist-initiated treatment was the least cost strategy (\$72.49) as compared to general and emergency physician-initiated (\$142.45 and \$370.27, respectively). The QALMs gained were comparable across the management strategies (i.e., similar effectiveness). We estimated the total five-year net savings of publicly funding community pharmacist-initiated treatment for 25% of Canadians presenting with uUTI would be \$51 million.

CONCLUSIONS: Community pharmacist-initiated treatment of uUTI has comparable efficacy with high likelihood of significant cost savings. These findings can facilitate recommendations on public funding of community pharmacist-initiated treatment of uUTI.

MedsCheck Long-Term Care in Ontario

Avery Loi, BMSc; Nancy He, BSc; Ahmad Shakeri, BSc; Lisa Dolovich, BScPhm, PharmD, MSc; Limei Zhou, PhD; Suzanne Cadarette, PhD

OBJECTIVES: MedsCheck Long-Term Care (MCLTC; annual and 3 quarterly reviews each year) was introduced in September 13, 2010 to support optimal health outcomes among LTC residents. Documentation requirements changed October 1, 2016 adding several components to MCLTC services. The objectives of this study were to describe the use of MCLTC services in Ontario over time and by region defined based on Local Health Integration Network (LHIN), and to examine the impact of the October 2016 document change on MCLTC service utilization.

METHODS: We identified all MCLTC services claimed from program launch to November 2018 using data housed at ICES. The mean monthly number of services were summarized by calendar year and LHIN. Rates were standardized by number of LTC beds within each LHIN. Interrupted time series analysis was used to examine the impact of the October 2016 policy change on the monthly number of services delivered, accounting for seasonality, non-stationarity, and autocorrelation.

RESULTS: A total of 2,157,787 services were provided to 255,626 patients. The number of MCLTC claims increased steadily over the first six months (e.g., 3,516 in September 2010; 13,974 in October 2010; 21,508 in March 2011), after which the monthly number remained relatively stable annually with a monthly average of 22,465 (SD=1,653). A small immediate decrease (-10.9%) was identified October 2016, yet returned to a mean of 22,698 (SD=1,520) by the last quarter of 2018. Little differences were seen across LHINs with all having annual MCLTC rates ≥ 1 (range=1.0-1.3) after adjusting for the number of LTC beds within each LHIN.

CONCLUSIONS: MCLTC services are commonly used across the province of Ontario.

Ontario pharmacy students' attitudes towards prescribing in pharmacy practice

Sarah Bento-De Sousa, PharmD (candidate)

- OBJECTIVES:** To determine readiness and willingness of students to practice as clinicians capable of assessing lab values, prescribing minor ailments, and adapting or initiating controlled substances.
- METHODS:** A three-part survey consisting of six questions on minor ailments using a 1-5 Likert scale, five questions (yes or no) on expanded pharmacist roles, and a text response box. The survey was distributed to University of Toronto and Waterloo pharmacy students and responses were collected over a 2-week period.
- RESULTS:** 129 students completed parts one and two of the survey; 28 completed part three. 70% of respondents were University of Toronto students. Overall, the median response was comfortable (4) in prescribing for six categories (acne, dyspepsia, headaches, EENT, skin, vaccines). 100% and 97% of Waterloo and Toronto students, respectively, selected yes to accessing lab values; 100% versus 80% of students were comfortable with ordering lab values. 67% versus 50% of students said yes to adapting and renewing controlled substances; of those who said yes, only half would also initiate them. Analysis of text responses generated three themes. First, students were willing to prescribe for minor ailments and previously diagnosed chronic conditions. They would also adjust and monitor controlled substances for the purpose of tapering patients. Most students do not want authority to prescribe for opioids due to abuse potential, and the current overprescribing climate. Finally, although students are open to continuing towards an expanded clinician role, they first want all pharmacists practising fully within the current scope. Pharmacists are capable of further professional services, but already lack the time to provide the current scope. A cited concern is reimbursement of these services; students would provide services if a billing structure is incorporated.
- CONCLUSIONS:** Ontario pharmacy students were comfortable holding a limited prescribing role (minor ailments, adapting opioids) if the time and appropriate remuneration was provided.

Patient impressions of pharmacist-led comprehensive medication management

Barbara Gobis, BSc(Pharm), RPh, ACPR, MScPhm, PCC; Anita Kapanen, PhD; Yuki Meng, PharmD (candidate)

OBJECTIVES: Pharmacists at the UBC Pharmacists Clinic provide comprehensive medication management (CMM) to complex patients on health care practitioner referral or self-referral. This Quality Assurance study captured and quantified patient impressions, expectations, perceptions and opinions about their care.

METHODS: Patients with first appointments between July 1/18 and Oct 31/18 or third appointments between Oct 1-31/18 received an online survey via e-mail. The survey used closed and open-ended questions, agreement statements and preference statements to capture patient expectations and experiences. Descriptive analyses were used to summarize findings.

RESULTS: Forty-seven (37%) of 126 first-time patients and 25 (32%) of 96 third-time patients responded. Most respondents were female (65%), 40-80 years old (64%) and referred by another health professional (55%). Common health conditions were chronic pain, migraine, heart disease and mental health. Respondents received service predominantly at the clinic (63%) or by telephone (22%) and indicated a preference for in-person appointments initially, and then follow-up by telephone. Before their first appointment, patients generally expected pharmacists to help them gain better understanding of, make changes to and resolve issues with their medications. Afterward, they reported greater understanding (91%) and better results (86%) from their medications. Similar results were reported by patients after follow-up. Respondents after the third appointment were better able to take their medications (86%), having less or no more problems with medications (71%) and self-reporting improved health (80%). After the first appointment, 66% of respondents were implementing a new behaviour or maintaining an established health behaviour, while 91% of those after their third appointment reported the same. Respondents consistently valued the pharmacist's skills and abilities to identify and resolve drug therapy problems along with their respectful, patient-centered approach.

CONCLUSIONS: Feedback from patients with complex drug therapy needs indicate they have high expectations and receptiveness to pharmacist-led CMM.

Pharmaceutical opinion services in Ontario

Nancy He, BSc; Lisa Dolovich, BScPhm, PharmD, MSc; Limei Zhou, PhD; Suzanne Cadarette, PhD

OBJECTIVES: The Pharmaceutical Opinion (PO) Program is a prescribing intervention service launched in April 2011 that permits community pharmacies to bill for written drug therapy recommendations made to prescribers for residents with Ontario Drug Benefits (social assistance beneficiaries, ages ≥ 65 years; and since January 2018: ages ≤ 24 years). The prescriber's response results in the medication being dispensed as prescribed, not dispensed, or changed. The objective of this study was to describe use of PO services in Ontario over time and by region defined based on Local Health Integration Network (LHIN).

METHODS: We identified all PO services claimed from program launch to November 2018 using data housed at ICES. The mean monthly number of services were summarized by calendar year overall and by LHIN. Census data were used to adjust PO rates for population size within each LHIN.

RESULTS: A total of 1,952,956 PO services were completed for 937,121 patients. The monthly number of PO services increased steadily from 12,046 claims in April 2011 to 25,516 claims in October 2013; and then remained relatively steady through to November 2018 with a mean of 23,012 (SD=2,458) claims per month. The monthly mean was similar over each calendar year with no seasonal differences identified. Northern rural areas had the highest PO rate (e.g., North East=24.0/1000 persons in 2018), while central densely populated regions had among the lowest (e.g., Central West=11.2/1000 persons and Mississauga Halton=10.0/1000 persons in 2018).

CONCLUSIONS: PO services are regularly completed in Ontario, and more commonly used in rural areas.

Pharmacist and physician competence and confidence with prescribing: A scoping review

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OBJECTIVES: Prescribing is a growing scope of practice for pharmacists. The objective of this scoping review is to assess of the literature related to pharmacist and physician competence and confidence with respect to prescribing.

METHODS: Online databases MEDLINE, EMBASE, and Global Health were used to identify articles from inception to October 2018. Peer-reviewed articles describing either the competence or confidence of physician, pharmacist or student prescribing, including inappropriate prescribing and prescribing errors were included. Abstracts, research protocols, literature reviews and letters were excluded. Articles that focused on patient perspectives, an intervention related to prescribing or prescribing education, a specific medication class or medical condition or other health professional prescribing were also excluded. No limits for language were set.

RESULTS: After applying the inclusion and exclusion criteria, 32 eligible articles remained. Sixteen articles were reviewed in full from hand searching, one being added to the final selection, resulting in a total of 33 articles included. Of these, 16 were published in the United Kingdom, 22 studied medical prescribing, 9 studied pharmacy prescribing, and two studied both. Many studies demonstrate that medical students and junior doctors are not competent in prescribing when they enter practice, although their perceived confidence is often higher than their assessed competence. Less research studies pharmacist competence and confidence, however it describes competent to prescribe that lack confidence in their prescribing knowledge. Additional emergent themes included self-awareness, lack of education and educational improvements, prescribing errors and resources, prescribing culture and barriers to prescribing, gender differences and benefits to prescribing.

CONCLUSIONS: There is little consensus from the outcomes of these studies related to prescribing competence or confidence. While some reflect positively on prescribing competence and confidence, others show major deficits in competence and lack of confidence. Further research needs to be done to evaluate pharmacist competence and confidence with respect to prescribing.

Pharmacists' experiences with quality-related event (QRE) reporting

Christopher Hartt, PhD; James Barker, PhD

OBJECTIVES: To describe the opinions/experiences of pharmacists, technicians and assistants of the error reporting and associated proactive communications system.

METHODS: In concert with ongoing quantitative research into the community pharmacists' experience with dispensing error reporting and prevention systems, a team has conducted four focus groups with community pharmacists, technicians and assistants in Nova Scotia to elicit their experiences with seven years of mandated error reporting. Saturation was achieved. MaxQDA software was employed to facilitate the analysis. Topics for the focus groups were informed by previous interviews with pharmacists.

RESULTS: While remaining supportive of the intent for mandatory error reporting, most participants experienced considerable difficulty with the system especially regarding system ease-of-use, time required, and the uncertainty their system training prepared them for regulatory audits. Respondents also expressed concerns regarding the usefulness of the information drawn from the error data base that is reported back to them, finding this information to be difficult and time-consuming to navigate and often repetitive. This led to a general lack of awareness of the potential resources available, especially among technicians and assistants. Corporate pharmacists also noted the requirement to report to both the mandated error database and to their in-house databases, which was seen as time consuming and a requirement that pushed them to focus more on reporting errors reaching the patient as opposed to near misses. All participants felt that error reporting is important and useful but that the system requires improvement to enhance its usability.

CONCLUSIONS: Pharmacists do use the mandated error reporting system and see it as an important means of identifying potential causes and prevention. However, they also struggle with many aspects of both reporting errors efficiently and fully utilizing the aggregated error information that comes back to them. Further research via a wide survey is recommended to test these qualitative findings.

Pharmacists practising in multidisciplinary primary health care teams in Quebec: What are their activities?

Line Guénette, BPharm, MSc, PhD; Anne Maheu, BPharm, MSc; Marie-Claude Vanier, BPharm, MSc; Nicolas Dugré, BPharm, MSc; Léonie Rouleau, PharmD, PhD; Lyne Lalonde, BPharm, PhD

OBJECTIVES: Revision of the primary care framework in 2015 has resulted in a wide spread integration of pharmacists in multidisciplinary primary health care teams in Quebec. Pharmacists are expected to optimize medication utilization by intervening directly on patients and by collaborating with other health care professionals. This study was performed to describe their practice setting and activities two years after implementation.

METHODS: A province-wide cross-sectional study was performed from May-August 2018. Pharmacists practising in family medicine groups (FMG) were invited to fill an online questionnaire comprising 8 questions on their practice setting, 9 to assess their activities (including administrative, clinical, clerical and collaborative work, with a 4-point Likert scale) and 13 questions on their satisfaction with these activities (assessed with a 5-point Likert scale). A descriptive analysis was performed.

RESULTS: Of the 299 pharmacists practising in FMG, 178 (59.5%) completed the questionnaire. Most of the settings were located on one site (65.2%), were not affiliated with a university (66.3%), hired only one pharmacist (48.3%) since 1-2 years (51.7%). A minority of pharmacists were not co-located in the practice and worked remotely (3.9%). Most frequent activities (i.e. scored often or very often) targeting patients were performing medication reviews (85.9%), follow-up phone calls (71.3%) and deprescribing (55.6%). Answering questions on specific issues was the most frequent activity targeting the team (90.5%). A low proportion of pharmacists (10.1%) reported being responsible of clerical activities with low clinical value. In general, pharmacists were satisfied with their setting and practice. Communications within the practice, collaboration with community pharmacists and functionalities of electronic medical records were the three areas for which pharmacists expressed most dissatisfaction.

CONCLUSIONS: This study is the first to describe pharmacists' activities in multidisciplinary primary health care teams in Quebec province since wider implementation. Activities that are well implemented and areas of improvement have been identified.

Pharmacists working in family medicine groups: A needs assessment study

Line Guénette, BPharm, MSc, PhD; Anne Maheu, BPharm, MSc; Marie-Claude Vanier, BPharm, MSc; Nicolas Dugré, BPharm, MSc; Léonie Rouleau, PharmD, PhD; Lyne Lalonde, BPharm, PhD

OBJECTIVES: This study was performed to assess the needs of pharmacists practising in family medicine groups (FMG) in order to develop a practice-based network fostering best practices.

METHODS: A Quebec province-wide cross-sectional study was performed from May to August 2018. Pharmacists practising in family medicine groups were identified through phone calls to all listed FMG and via direct emails. All identified pharmacists were sent, by email, an invitation to fill an online questionnaire comprising 44 questions to assess their sociodemographic characteristics, to describe their FMG and to assess their needs to attain an optimal practice. The link to the questionnaire was also publicized in a Facebook group of pharmacists and by several professional organizations. A descriptive analysis was performed and discussed with two committees: a working group of FMG pharmacists and an advisory committee comprising key stakeholders.

RESULTS: Two hundred and ninety-nine FMG pharmacists were identified and 178 (59.5%) completed the online questionnaire. Most of them were women (71.9%), were less than 40 years old (71.9%), had a bachelor degree as their highest degree (44.9%), and also practiced as community pharmacists (76.4%). Participants were practising in a FMG for a mean of 11.2 hours a week (range: 1-36). A high proportion (53.9%) had a poor to fair confidence in their capacity to play their role optimally. Training and mentorship adapted to FMG practice and a better understanding of the role of the FMG pharmacist by other health care professionals were the most frequently mentioned needs. Performing comprehensive medication assessments and developing thorough pharmaceutical care plans were among clinical competences pharmacists wanted to develop. Scientific and inter-professional communication was also among abilities they wished to optimize.

CONCLUSIONS: This study elicited several FMG pharmacists' needs. This will provide a strong foundation for the development of a practice-based network adapted to these needs.

Pharmacy smoking cessation services in Ontario

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OBJECTIVES: The Ontario Pharmacy Smoking Cessation (SC) Program was launched September 1, 2011 to reimburse pharmacies for providing smoking cessation services. Residents with Ontario Drug Benefits (ODB: social assistance beneficiaries, ages ≥ 65 years; and since January 2018: ages Mathematical Pi24 years) are eligible to receive SC services. SC services include enrolment and up to 7 follow-up services within the year. The objective of this study was to describe the use of SC services in Ontario over time and by region defined based on Local Health Integration Network (LHIN).

METHODS: We identified all SC services claimed from program launch to November 2018 using data housed at ICES. The mean monthly number of services were summarized by calendar year overall and by LHIN. SC service rates were adjusted for the number of ODB eligible persons within each LHIN.

RESULTS: A total of 41,696 services were provided to 17,940 patients. SC rates declined in Ontario from 2.10/1000 persons in 2012 to 1.21/1000 persons in 2015. Adjusted Results are not yet available 2016-2018, yet are projected to be similar to 2015. Erie St. Clair (n=3645) and Hamilton Niagara Haldimand Brant (n=3601) had the greatest number of patients enrol. Central West (n=521) and Mississauga Halton (n=1499) had low enrolment compared to North East (n=1570) and North West (n=530) that had similar numbers yet much smaller population sizes.

CONCLUSIONS: Enrolment in the Ontario Pharmacy SC services was similar over the first two years, followed by a decline in the third year that then leveled off.

Polypharmacy among older individuals with chronic obstructive pulmonary disease: 2000-2015 trends in Quebec, Canada

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OBJECTIVES: The treatment of chronic obstructive pulmonary disease (COPD) and concomitant diseases requires several medications. Yet there is little data on how the pharmacological burden progressed over time among older individuals with COPD. We aimed to: 1) describe the proportion of older adults with COPD in Quebec that were exposed to polypharmacy (≥ 10 , ≥ 15 or ≥ 20 medications / year) between 2000 and 2015; 2) calculate the proportion receiving specific COPD medications during this period.

METHODS: We conducted a population cohort study with data from the Quebec Integrated Chronic Disease Surveillance System. Individuals aged ≥ 66 years with COPD, covered by the public drug plan and alive for the duration of the year studied (2000 to 2015) were included. We calculated the total number of drugs used at least once by each individual during each of the studied years. We used age- and sex-standardized proportions to compare proportions between the years. We also performed t-tests to compare continuous variables and used Poisson regression models with robust error variance estimator to test trends.

RESULTS: The average number of drugs used increased from 12.0 in 2000 to 14.8 in 2015 ($p < 0.0001$). The proportion of individuals using ≥ 10 drugs increased from 62.0% to 74.6%; while it increased from 31.2% to 45.4% for ≥ 15 drugs; and from 12.3% to 22.4% for ≥ 20 drugs ($p < 0.0001$). In 2000, 18.7% of individuals received long-acting bronchodilators, while it was 69.6% in 2015 ($p < 0.0001$). In the same period, the use of short-acting bronchodilators decreased from 81.5% to 67.9%, and inhaled corticosteroids, from 60.6% to 26.0% ($p < 0.0001$). The proportion of users of methylxanthines inhibitors decreased from 15.0% to 1.9% ($p < 0.0001$).

CONCLUSIONS: Older individuals with COPD are increasingly exposed to polypharmacy. Pharmacists can play a major role in ensuring COPD patients receive optimal pharmacotherapy, associated with the greatest benefits and lowest risks.

Prescribing and care by pharmacists for uncomplicated urinary tract infections in the community: Antimicrobial utilization and stewardship results of the RxOUTMAP study

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OBJECTIVES: Urinary tract infections (UTI) are common infections that often result in suboptimal antibacterial use. Pharmacists are accessible primary care professionals who have an important role to play in antimicrobial stewardship. Our objective was to evaluate the appropriateness of antibacterial prescribing by pharmacists for patients with uncomplicated UTI.

METHODS: We conducted a prospective registry trial in 39 community pharmacies across New Brunswick. Adult patients were enrolled if they presented to the pharmacy with either symptoms of UTI with no current antibacterial treatment (Pharmacist-Initial Arm) or if they presented with a prescription for an antibacterial to treat UTI from a physician (Physician-Initial Arm). Pharmacists assessed patients and if they had complicating factors or red flags for systemic illness or pyelonephritis, they were excluded from the study. Pharmacists either prescribed antibacterial therapy, modified antibacterial therapy, provided education only, or referred to physician, as appropriate. Antibacterial therapy prescribed was compared between the study arms.

RESULTS: There were 750 patients enrolled (87% Pharmacist-Initial Arm). The most commonly prescribed agents in the Pharmacist-Initial Arm were nitrofurantoin (88%), sulfamethoxazole-trimethoprim (TMP-SMX) (8%), and fosfomycin (2%) vs nitrofurantoin (55%), TMP-SMX (26%), and fluoroquinolones (11%) in the Physician-Initial Arm. Nitrofurantoin was prescribed for 5 days in 97% of Pharmacist-Initial orders as compared to Physician-Initial orders where 65% were for greater than 5 days. TMP-SMX was prescribed for 3 days in 88% of Pharmacist-Initial compared to Physician-Initial where 63% were for greater than 3 days. Therapy was guideline concordant in 95% of Pharmacist-Initial compared to 35% of Physician-Initial ($p < 0.001$). For guideline-discordant therapy from physicians, pharmacists prescribed to optimize therapy for 46% of patients.

CONCLUSIONS: Treatment was more guideline-concordant when initiated by pharmacists, with longer treatment durations and more fluoroquinolones prescribed by physicians. This represents an important opportunity for antimicrobial stewardship interventions by pharmacists in the community.

Proton pump inhibitor deprescribing initiative conducted at a community pharmacy

Frank Hack, BScPhm, MSc; Ahalya Mehta, PharmD; Yu Jin Lee, PharmD (candidate)

OBJECTIVES: To determine the feasibility and success rate of a pharmacist-led and -managed proton pump inhibitor (PPI) deprescribing initiative in the community pharmacy setting.

METHODS: PPIs are one of the most commonly prescribed medications and are used to treat ulcers, gastroesophageal reflux disease and other upper gastrointestinal conditions, with symptom resolution occurring in approximately 80% of patients after 4-8 weeks of therapy. PPI usage is linked with an increase in the risk of fractures, pneumonia and C. difficile infections, therefore deprescribing PPIs could have a significant beneficial impact on patient outcomes, with community pharmacists uniquely positioned to lead this initiative. A PPI deprescribing initiative was conducted at a community pharmacy in Toronto, Canada, over a 5-week period between July 10, 2017 to August 18, 2017. 514 patients were dispensed PPIs and contacted by pharmacists who determined their eligibility for deprescribing using an evidence based clinical practice guideline. Eligible patients were informed of the study rationale, including the potential harm of using PPIs without an ongoing indication for more than 4 to 8 weeks. Enrolled patients began a 1-week trial of alternate day therapy with their PPI regimen, and were contacted on Day 8 to assess feasibility of stopping PPI therapy in collaboration with the prescribing physician.

RESULTS: Out of 514 patients who were prescribed PPIs, 75% were candidates for deprescribing, 28% consented to participate and 80% received approval from their physicians to attempt the 1-week trial. Following the study, 77% of patients successfully stopped PPI therapy after one week of alternating therapy.

CONCLUSIONS: Most studies of PPI deprescribing interventions are conducted in a hospital, long-term care home or primary care clinic setting. This initiative demonstrates that community pharmacists are ideally positioned to successfully carry out similar deprescribing programs with positive health outcomes.

Real-world implementation of diabetes management by pharmacists: The RxING practice tool

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Ross Tsuyuki, BSc(Pharm), PharmD, MSc, FCSHP, FACC, FCAHS

- OBJECTIVES:** Optimal community-based care for patients with diabetes remains elusive. There is strong trial evidence for the impact of pharmacist care in diabetes, but implementation is lacking. Our objective was to evaluate the impact of real-world pharmacist care on estimated cardiovascular (CV) risk in patients with diabetes.
- METHODS:** Design: Prospective registry and practice implementation tool. Setting: Community pharmacies across Alberta. Population: Patients with type 1 and type 2 diabetes who had at least one uncontrolled risk factor (A1C, blood pressure, LDL-cholesterol, or current tobacco users). The RxING practice tool is an online guideline-driven tool, which helps pharmacists implement and document care of their patients with diabetes. Pharmacist care included prescribing, ordering laboratory tests, assessing patients' CV risk and regular follow-ups. Primary outcome: Change in estimated CV risk (risk of a major CV event in the next 10 years) after 6 months (calculated using validated risk engines, www.epicore.ualberta.ca/epirisk/).
- RESULTS:** This analysis includes the first 128 patients enrolled by 34 pharmacists. Mean age was 59.5 years (standard deviation 15.6), 52% were male and 99% had type 2 diabetes. After 6 months, CV risk was reduced from 21.7% (18.3) to 15.4% (14.4) (a 29% relative risk reduction, $p=0.004$), A1C from 8.5% (1.9) to 7.7% (1.7) ($p = 0.002$), systolic blood pressure from 133.8 mmHg (14.6) to 129.9 mmHg (11.7) ($p = 0.032$) and diastolic blood pressure from 80 mmHg (9.1) to 77.5 mmHg (8.5) ($p = 0.04$). LDL-cholesterol was not reduced significantly.
- CONCLUSIONS:** This is the first study to report real world outcomes of diabetes management by pharmacists using a practice implementation tool. Pharmacist care was associated with a 29% reduction in the risk of a major vascular event. Tools such as this can translate findings from trials into everyday practice.

Relying on pharmacy students as digital natives in practice: Surprising gaps in digital health literacy

Jason Min, BSc(Pharm); Jamie Park, PharmD (candidate)

OBJECTIVES: While much has been described about technology use by digital natives in general, understanding of pharmacy student's knowledge and understanding of technology is lacking. This study explores the current state of pharmacy students' self-rated digital health literacy in BC and seeks to identify priority areas that could be implemented and improved for future curricula to meet the changing needs in pharmacy practice.

METHODS: A mixed methods design using surveys and interviews was conducted. An online, validated survey (eHEALS) was conducted among currently enrolled 2nd to 4th year pharmacy students at the University of British Columbia. An additional interview was offered to consenting participants to further explore the use of technology in daily lives, pharmacy practicums, and implications on future pharmacy curricula. Both quantitative and qualitative thematic analysis was done of all data.

RESULTS: A total of 30 pharmacy students completed the eHEALS survey and 4 completed 30-minute interviews. Most participants were 2nd year students (50%), were 25 years and younger (80%), and female (87%). Ranking of digital health literacy was lower than expected with participants stating they know what (87%), where (87%) and how to find (77%) health resources on the Internet. Even fewer students (77%) rated that they have the skills to evaluate the health resources that they find on the Internet and only 53% felt confident in using information from the Internet to make health decisions. Most students mentioned that they had limited technology related training at school and would like more training opportunities throughout their program despite their experiences of using technology in practice.

CONCLUSIONS: These results expose significant and surprising gaps in student understanding of technology despite modifications seen in the entry-to-practice PharmD curriculum. Regional differences and digital health literacy of practising pharmacists are areas that require better understanding and hold significant impact as practice changes.

The impact of SIMPL-SYNC refill synchronization on medication adherence: A pragmatic randomized controlled trial

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OBJECTIVES: To evaluate the impact of refill synchronization on medication adherence.

METHODS: Patients receiving chronic medications from one of two participating pharmacies were randomized to receive the SIMPL-SYNC refill synchronization (SSRS) service or usual care (UC). Patients randomized to SSRS received a brief assessment by the pharmacist before every synchronization. Patients randomized to usual care were not contacted before refills. The primary outcome was the percentage of individuals who achieved optimal adherence to all of their eligible medications. Optimal adherence was defined as at least 80% using the proportion of days covered (PDC) measure.

RESULTS: A total of 488 patients were screened for eligibility. Two hundred seventy-four were excluded and 214 were randomized (107 to SSRS and 107 to UC). Of these, 12 individuals were excluded from each group because they did not receive a medication from an eligible category or could be followed for at least 300 days. Of the remaining 190 patients (95 in each group), mean age was 59 years and 34% (n=65) were over the age of 65. The percentage of individuals achieving at least 80% adherence to all of their eligible medications was 61.1% (58/95) receiving SSRS versus 51.6% (49/95) receiving UC (p=0.188). In terms of individual medication classes, the largest impact on adherence was observed for ACEI/ARBs (90.7% (49/54) in SSRS versus 71.9% (41/57) in UC usual care (p<0.001)) and statins (80.8% (42/52) in SSRS and 72.6% (37/51) in usual care (p<0.05)). In contrast, several medication classes did not appear to be impacted by the refill synchronization program.

CONCLUSIONS: A pragmatic refill synchronization program did not increase the percentage of individuals exhibiting optimal adherence to all of their chronic medications. However, in secondary analyses, optimal adherence to common medications such as ACE inhibitors and statins showed significant improvements.

Development and Testing of a Framework for the Assessment of Health-Related Risks Among Travellers by Pharmacists in Ontario

Heidi Fernandes, PharmD, RPh, MSc Candidate; Sherilyn Houle, BSP, PhD, CTH

OBJECTIVES: In December 2016, the scope of pharmacist-administered immunizations expanded in Ontario, Canada to include 13 vaccine-preventable diseases — many of which are travel-related. Community pharmacists without specialized training in travel medicine can positively impact the health of travelling patients, including by identifying those who would benefit from referral to a travel clinic, but remain hesitant due to lack of confidence and lack of direction on integrating this screening into existing practice. This project aims to support the uptake of pharmacists as health care providers in travel medicine by creating an evidence-based framework that pharmacists can apply to guide their assessment of travelling patients.

METHODS: Framework creation is divided into two phases: development and assessment. The framework was developed by a panel of health care professionals with their Certificate in Travel Health from the International Society of Travel Medicine. This panel generated framework items of essential components of a travel risk assessment, which were then validated using the Content Validity Index (CVI). In the assessment phase, the framework will be tested in practice by community pharmacists (generalists, without CTH designation) and 4th-year PharmD clinical rotation students. The framework's feasibility and impact on practice will be assessed via pre- and post-test online surveys.

RESULTS: 7 pharmacists and 2 physicians identified 50 risk factor considerations organized into domains comprising the 5 W's of travel: who, what, when, where, and why. The average-CVI of the final items was calculated to be 0.9375, indicating acceptable content validity. The framework is currently in its testing stage with results pending.

CONCLUSIONS: This is the first tool of its kind to triage travelling patients targeted to community pharmacy practice. Using this framework, patients with risk factors complicating their assessment can be referred to a travel medicine specialist, while low-risk patients may be manageable by the pharmacist.

Exploring Medication Safety Culture in New Brunswick Community Pharmacies using the Medication Safety Culture Indicator Matrix

Larry Sheng, BSc, PharmD candidate; Certina Ho, RPh, BScPhm, MSt, MEd, PhD

OBJECTIVES: Medication Safety Culture Indicator Matrix (MedSCIM) is a validated tool that is used to assess patient safety culture within a health care setting by inspecting the narrative information presented in medication incident reports. The objective of this study was to explore the medication safety culture in New Brunswick community pharmacies by applying MedSCIM to assess medication incidents associated with patient harm.

METHODS: Sixty-nine incidents associated with patient harm that were anonymously reported by New Brunswick community pharmacy professionals from July 2015 to December 2017 were included in this assessment. Using MedSCIM, we performed descriptive statistics and exploratory data analysis on the incidents.

RESULTS: Based on MedSCIM, maturity of patient safety culture can be measured by a two-dimensional 3-by-4 matrix: (1) Core Event Degree of Documentation (where 1 = fully complete; 2 = semi-complete; and 3 = incomplete report) and (2) Maturity of Culture to Medication Safety (where A = generative; B = Calculative; C = Reactive; and D = Pathological). Of the 69 incidents associated with patient harm, 19 (27.5%) were scored as “1A” incidents and 15 (21.7%) were “2C” incidents. We also identified that the majority of the “pathological” incidents often involved relief pharmacy professionals; and high-alert medications (e.g., methadone and insulin) were frequently associated with harm incidents.

CONCLUSIONS: Our MedSCIM analysis reveals that there is still work to be done to facilitate medication safety culture towards a more “systems-oriented” or “generative” attitude. Our study offers a baseline of medication safety culture in New Brunswick as the provincial mandatory medication incident reporting practice directive was recently implemented in 2018. Striving for a “generative” safety culture can ultimately lead to optimization of patient outcomes.

MedsCheck at Home Services in Ontario

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OBJECTIVES: MedsCheck Home (MCH) is an annual medication review service funded since mid-September 2010 for residents with a valid Ontario health card taking three or more medications for chronic conditions and unable to physically visit a pharmacy (e.g., due to physical or mental incapability, or proximity to a community pharmacy). Documentation requirements changed October 1, 2016, adding several components to MCH services. The objectives of this study were to describe the use of MCH services in Ontario over time and by region defined based on Local Health Integration Network (LHIN), and to examine the impact of the October 2016 document change on MCH service utilization.

METHODS: We identified all MCH services claimed from program launch to November 2018 using data housed at ICES. The mean monthly number of services were summarized by calendar year and LHIN. Interrupted time series analysis was used to examine the impact of the October 2016 (intervention date) policy change on the monthly number of services delivered, accounting for seasonality, non-stationarity, and autocorrelation.

RESULTS: A total of 208,822 services were completed for 134,878 patients. The monthly number of services initially increased (2010: mean=1,257, SD=355; 2011: mean=1,507, SD=186; 2012: mean=2,134, SD=441; 2013: mean=2,417, SD=333) and then remained relatively stable (mean=2,733, SD=321) until September 2016. An immediate decrease (-52.4%) was identified October 2016 with regional differences noted (from -61.2% North West to -28.5% Central West). The monthly number of services increased over 6 months to 1,541 in April 2017, then stabilized but remained lower than before the policy change (mean from April 2017 to November 2018=1,629, SD=202).

CONCLUSIONS: Substantial decreases in MCH occurred following the policy change and they remain two-thirds lower than before the documentation change.

Multi-Incident Analysis on Incidents Involving Patients in Manitoba

Kelvin Ng, PharmD candidate; Certina Ho, RPh, BScPhm, MIST, MEd, PhD; Jemima Selorio, RPh, BScPhm, PharmD candidate

OBJECTIVES: Since September 2017, the College of Pharmacists of Manitoba (CPhM) has initiated a standardized continuous quality improvement (CQI) program, Safety IQ, which includes a number of components targeted towards improving medication safety, such as the proactive medication safety self-assessment and the retrospective anonymous medication incident reporting. The objective of this study was to gain a deeper understanding of the possible contributing factors to incidents involving patients in Manitoba, and to develop potential recommendations to prevent error recurrences.

METHODS: Twenty community pharmacies participated in the Safety IQ pilot in Manitoba from September 2017 to June 2018. A total of 659 incidents were reported during this period; 203 of which involved a patient. From these 203 incidents, nine incidents were excluded due to incomplete incident description. An additional three incidents were eliminated as they were deemed to be duplicates. Therefore, 191 incidents were included in this qualitative, multi-incident analysis.

RESULTS: Two main themes were identified from the multi-incident analysis, which included (1) Prescription Information Management and 2) Prescription Product Management. Subthemes were further developed for each main theme, which included (1) Gathering Information, (2) Processing Information, and (3) Transferring Information; and (1) Inventory Management, (2) Product Preparation, and (3) Prescription Hand-over, respectively.

CONCLUSIONS: System-based recommendations involving communication and technology advancement were designed to address potential contributing factors in order to improve safe medication use during both prescription information and prescription product management processes within community pharmacies. It is hoped that this multi-incident analysis illustrated some of the common medication incidents encountered by community pharmacies in Manitoba and the importance of reporting, analyzing, and learning from these incidents for continuous quality improvement.

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