

2015 CSHP National Awards Program Winners Programme national des prix 2015 de la SCPH : lauréats et lauréates

The winner of the **Distinguished Service Award** (sponsored by Johnson & Johnson Family of Companies) is **Margaret Colquhoun** (Toronto, ON).

The winner of the **Isabel E. Stauffer Meritorious Service Award** (sponsored by Fresenius Kabi Canada Ltd.) is **Barbara Thomas** (St. John's, NL).

The winners of the **New Hospital Pharmacy Practitioner Award** (sponsored by Sandoz Canada Inc.) are **Hilary Rowe** (Surrey, BC) and **Jaris Swidrovich** (Saskatoon, SK).

The winner of the **Hospital Pharmacy Student Award** (co-sponsored by the Canadian Society of Hospital Pharmacists [CSHP] and the Canadian Association of Pharmacy Students and Interns [CAPSI]) is **Katherine Koroluk** (Toronto, ON).

CSHP 2015 Hospital Pharmacy Residency Project Award

Sponsored by **Fresenius Kabi Canada Ltd.**

Assessment of the Effect of Behavioral Change Strategies on Knowledge Translation and Pharmacist Interventions for Antimicrobial Stewardship: 'PIAS-KT' Study (oral presentation) (completed at Interior Health Authority)
Sukhjinder Sidhu

Management and Leadership Best Practice Award

Sponsored by **Apotex Inc.**

Assessing the Impact of an Expanded Scope of Practice for Pharmacists at a Community Hospital (oral presentation) (completed at Burnaby Hospital)
Soomi Hwang, Tamar Koleba, Vincent Mabasa

Sponsored by **Medbuy Corporation**

Quality Improvement of Non-Sterile Compounding in Winnipeg Regional Health Authority Pharmacies (oral presentation) (completed at Winnipeg Regional Health Authority)
Donna Woloschuk, Wendy Simoens

Patient Care Enhancement Award

Sponsored by **Pfizer Canada Inc.**

Pharmacists' Interventions in New Ambulatory Chemotherapy Patients (completed at BC Cancer Agency)
Shirin Abadi, Paul Koke, Susan Walisser, Winnie Cheng, Neil de Haan

Sponsored by **Teva Canada Limited**

Implementation of an Outpatient Pharmacy Flu Vaccination Program for Solid Organ Transplant Patients (completed at University Health Network)
Anna Lee, Jennifer Harrison, Karen Chuk, Esther Fung

Pharmacotherapy Best Practices Award

Sponsored by **Pfizer Canada Inc.**

Evaluation of Hypersensitivity Reactions Following the Discontinuation of Prophylactic Pre-medications (completed at University Health Network)
Caitlin Meyer, Colette Raymond, Pamela Ng

Safe Medication Practices Award

Sponsored by **HealthPRO Procurement Services Inc.**

Targeted Deprescribing in an Outpatient Hemodialysis Unit to Decrease Polypharmacy: A Pilot Study (completed at University Health Network)
Marisa Battistella

Sponsored by **Medbuy Corporation**

The Successful Implementation of a Fully Automated Robotic Intravenous System for Chemotherapy Preparation (completed at Royal Victoria Regional Health Centre, Barrie, ON)
Jennifer Li, Michal Racki

Specialties in Pharmacy Practice Award

Sponsored by **Pharmascience Inc.**

Optimized Dosing of Cefazolin in Patients on Nocturnal Home Hemodialysis (oral presentation) (completed at University Health Network)
Vivian Law, Linda Dresser, Scott Walker, Marisa Battistella

Teaching, Learning and Education Award

Sponsored by **Eli Lilly Canada Inc.**

Effectiveness of Extracurricular Journal Clubs on Pharmacy Students' Learning of Evidence-based Medicine and Critical Appraisal (completed at School of Pharmacy, University of Waterloo)
Certina Ho

The award-winning abstracts are published exactly as submitted by the authors and have not undergone any copyediting by the Canadian Journal of Hospital Pharmacy.

Le Journal canadien de la pharmacie hospitalière n'a pas soumis les résumés primés à une révision linguistique et les publie ici tels que remis par les auteurs.

Assessment of the Effect of Behavioral Change Strategies on Knowledge Translation and Pharmacist Interventions for Antimicrobial Stewardship: 'PIAS-KT' Study (oral presentation)

CSHP 2015 Hospital Pharmacy Residency Project Award, sponsored by Fresenius Kabi Canada Ltd.

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Introduction: Ward-based pharmacists resolving drug therapy problems (DTPs) improve antimicrobial appropriateness for urinary tract infections (UTI) and pneumonia. Not all resolved DTPs for these diseases carry the same positive impact on antimicrobial appropriateness, therefore Interior Health has identified key pharmacist interventions (KPIs), defined as resolved DTPs associated with antimicrobial appropriateness. Education alone often fails to produce sustained knowledge transfer and behavior change and should be included as part of a multifaceted strategy. The objective was to evaluate the impact of a multifaceted behavior change strategy on pharmacist knowledge and practice for UTI and pneumonia patients.

Methods: A one group, pre/post study was conducted to evaluate the impact of an eight-week knowledge and behavior change strategy on pharmacists at Interior Health. The primary outcome was change in proportion of UTI and pneumonia DTPs resolved from the 6-month pre- to 6-month post-intervention phase. Secondary outcomes included the change in proportion of UTI and pneumonia KPIs resolved, change in knowledge quiz scores, and a balancing endpoint defined as change in proportion of heart failure (HF) DTPs resolved.

Results: The proportion of resolved UTI and pneumonia DTPs increased from 17.8% to 27.2% (relative risk increase [RRI] 52.8%, 95% confidence interval [CI] 42.8-63.6%; $p < 0.05$). The proportion of resolved UTI and pneumonia KPIs increased from 12.2% to 18.2% (RRI 49.9%, 95% CI 34.5-67.0%; $p < 0.05$). Knowledge quiz scores significantly increased by 17% but resolved HF DTPs decreased from 14.3% to 8.5% (RRR 40.4%, 95% CI 33.9-46.2%; $p < 0.05$).

Conclusions: Multifaceted behavior change strategies improve pharmacist knowledge and behavior for UTI and pneumonia resulting in improved antimicrobial appropriateness. However, these improvements may be offset by reduced HF interventions.

Relevance to CSHP 2015 Initiative: PIAS-KT has shown that pharmacists can actively contribute to effective and evidence-based medication use for infectious diseases and to public health initiatives, such as improving antimicrobial stewardship-related endpoints.

Assessing the Impact of an Expanded Scope of Practice for Pharmacists at a Community Hospital (oral presentation)

Management and Leadership Best Practice Award, sponsored by Apotex Inc.

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Introduction: Clinical pharmacists at Burnaby Hospital began including expanded scope of practice (ESP) activities in their practice on April 1, 2012. ESP activities that a pharmacist may perform

without prior authorization from a prescriber include re-ordering chronic medications, initiating OTC medications, changing drug formulations, changing drugs within same therapeutic classes, and titrating medication doses. The objective of this study was to describe and assess the impact of ESP at Burnaby Hospital, in terms of ESP activities performed and their associated outcomes, and the experience of pharmacists and the impact of ESP on physicians after its implementation.

Methods: All ESP activities by pharmacists required documentation in the patient health care record via a Clinical Pharmacy Note (CPN). CPNs were collected from April 1st to September 30th, 2012 and were reviewed. Physicians and participating pharmacists were surveyed to gather feedback on their experiences.

Results: A total of 227 CPNs produced by 11 clinical pharmacists were reviewed. These CPNs documented 194 activities that met the inclusion criteria. Of 194 activities, 135 (69.6%) were titrating medication doses. The majority of the outcomes were deemed to enhance clinical outcomes of the patient (81.5%). All of eight pharmacists and fourteen physicians surveyed either agreed or strongly agreed that the implementation of ESP improved overall quality of comprehensive patient care.

Discussion: There was a high percentage of ESPs that pharmacists have traditionally performed, such as vancomycin and phenytoin pharmacokinetic dosing, and renal dosing services as expected. Since ESP implementation, pharmacists also provided new services, such as re-ordering chronic medications, initiating OTC medications, changing medications within therapeutic class, and titrating various other medications.

Conclusion: Hospital pharmacists integrated ESP activities into their clinical practice with relative ease. These activities resulted in improved patient-related clinical and humanistic outcomes, as well as decreased health-care costs.

Quality Improvement of Non-Sterile Compounding in Winnipeg Regional Health Authority Pharmacies (oral presentation)

Management and Leadership Best Practice Award, sponsored by Medbuy Corporation

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Objectives: We established policy, staff training, and quality assurance (QA) monitoring for non-sterile compounding (NSC) scales in Winnipeg Regional Health Authority (WRHA) pharmacies to improve patient safety and to enable delegation of NSC checking to non-pharmacists.

Description of the Project: We inspected NSC practices and equipment at eight pharmacies. Based on identified gaps, we focused quality improvement efforts on policy and equipment that underpin NSC safety. Those efforts enabled staff training and a quality assurance (QA) program, and form a basis for regional master NSC recipes.

Project Experience: Inspections conducted May-November 2012 showed that no pharmacy met procedures, recipe, and quality control (QC) process criteria. No pharmacy scales met all QA criteria, 4 (25%) scales required replacement, and 80% of scales needed new reference weights in order to perform routine QC. During January-June 2013, policy for scale operation, maintenance and QC, and mass determination checking standards were developed. To facilitate staff training, inservice slides and scale operation job aids were created and tested.

Equipment and staff skill upgrades were completed June 2014. Follow-up QA audits are underway.

Discussion: Best practices can fall by the wayside in busy pharmacies. Without detailed NSC standards, we had the cumbersome task of creating our own detailed policy, QC and QA monitoring processes for pharmacy scales. Staff welcomed the new measures.

Conclusion: Improving NSC requires policy, procedures, and comprehensive QC and QA monitoring. Standardization of NSC foundational elements at eight hospital pharmacies has assured quality and, in concert with a concurrent project, enabled delegation of NSC checking to non-pharmacists at two of those pharmacies.

Pharmacists' Interventions in New Ambulatory Chemotherapy Patients

**Patient Care Enhancement Award,
sponsored by Pfizer Canada Inc.**

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Introduction: Patients with cancer are at high risk for experiencing medication discrepancies and drug-related problems. Oncology pharmacists play an important role in identifying and resolving medication-related issues. The study objectives were to determine the pharmacists' impact during the chemotherapy checking process on the identification and resolution of medication discrepancies and drug-related problems in ambulatory cancer patients, and to capture the resources associated with the provision of this service.

Methods: This was a prospective, non-randomized, multi-centre study. Data from new ambulatory chemotherapy patients was collected prospectively by pharmacists conducting medication histories and performing chart reviews. The numbers and types of medication discrepancies and drug-related problems were determined, using each centre's current processes for chart-checking and/or verification of medication orders and histories. Data sources included the patient's Pharmacy Treatment Record, Health Assessment Form, Province-wide central prescription data network (PharmaNet) profile, computerized information systems, physician's dictation, and the paper health record to check for allergies, correct doses of chemotherapy drugs, required lab work, and all other relevant medication-related information, as applicable to both intravenous and oral chemotherapy drugs.

Results: 192 medication discrepancies were identified among 861 new ambulatory chemotherapy patients, of which 187 (97%) were resolved. 171 (89%) of the discrepancies were unintentional, while 21 (11%) were undocumented intentional discrepancies. 452 drug-related problems, excluding discrepancies, were also identified, of which 437 (97%) were resolved. The most common drug-related problems identified and resolved included the need for the provision of drug information and patient counseling, missing pertinent laboratory measures and drug interactions. On average, 26 minutes were spent per patient assessment, resulting in \$22,399 pharmacy resource expenditure.

Discussion: The study results were strengthened by the large sample size, standard definitions, validated scale and data verification.

Conclusion: Clinically important medication discrepancies and drug-related problems were identified and resolved by oncology pharmacists in new ambulatory chemotherapy patients.

Keywords: Medication discrepancies, drug-related problems, medication errors, antineoplastic agents, pharmacists

Implementation of an Outpatient Pharmacy Flu Vaccination Program for Solid Organ Transplant Patients

**Patient Care Enhancement Award,
sponsored by Teva Canada Limited**

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Introduction: Despite significant morbidity and mortality associated with flu infections in solid organ transplant (SOT) recipients, flu vaccines remain underutilized in this population. Current SOT consensus guidelines strongly recommend flu vaccination for patients and their close contacts on an annual basis to reduce influenza transmission risk. An SOT pharmacy flu vaccination program was established to improve vaccination education, screening and service accessibility for ambulatory SOT patients, their close contacts and the multidisciplinary transplant clinical team.

Methods: A transplant infectious disease specialist and published author of several vaccination consensus guidelines was consulted to ensure appropriate flu vaccination and screening processes specific to SOT patients. Pharmacy program tools, training resources and implementation materials were developed for the 2013-14 influenza season. Vaccination screening and administration were provided to all transplant patients and contacts on a voluntary basis at the institution's transplant specialty pharmacy.

Results: A total of 638 flu vaccinations were administered from October 24, 2013 to April 9, 2014. 63% of vaccination recipients were SOT (heart, kidney, kidney-pancreas, liver, lung) patients. The remaining 37% were comprised of family, caregivers, friends and other non-transplant ambulatory patients. No post-vaccination adverse events were observed or reported.

Discussion: The success of this pharmacy flu vaccination program has justified future plans to continue this service as a permanent program. Future directions include clinical research evaluating patient outcomes and vaccine immunogenicity in our SOT population, as well as exploring additional strategies to further increase flu vaccination awareness and immunization rates.

Conclusion: A significant number of vulnerable patients and close contacts were immunized as a result of this unique pharmacist-led initiative. Implementation of similar pharmacy initiatives can make a positive contribution to raising awareness about the importance of annual flu vaccinations, particularly for high-risk patients.

Evaluation of Hypersensitivity Reactions Following the Discontinuation of Prophylactic Pre-medications

Pharmacotherapy Best Practices Award, sponsored by Pfizer Canada Inc.

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Introduction: Paclitaxel administration is associated with a variable rate of hypersensitivity reactions (HSRs), which are infrequent beyond the second dose. Pre-medications (corticosteroids and anti-histamines) are administered to reduce this risk, but are associated with adverse effects and a longer visit time. It is unclear if pre-medications are needed beyond the second dose. Pre-medications were discontinued for all patients receiving paclitaxel-based regimens beyond the second dose. We evaluated this practice change and hypothesized that this policy is unlikely to result in an increased rate of HSRs.

Methods: A retrospective chart review was performed to review the incidence of HSRs. Adult patients were included if they received paclitaxel-based chemotherapy and did not have an HSR during the first two doses. Surveys were administered to patients receiving weekly paclitaxel and time required to administer pre-medications was tracked.

Results: Two of 111 (1.80%) patients receiving paclitaxel + platinum and two of 76 (2.63%) patients receiving paclitaxel +/- trastuzumab had non-severe HSRs. An average of 90 minutes of chair time per patient (per clinic visit), was saved. Of 52 surveys, 23 (44%) were returned and 20 patients (86.9%) preferred treatment without pre-medications.

Relevance to CSHP 2015 Initiative: This project supports and promotes the implementation of goal 3 (objective 3.2). This project generated evidence to support a practice change and protocol to remove pre-medications based on the evidence of similar rates of HSRs in comparison to current literature.

Discussion: This is the first study to remove pre-medications for paclitaxel + platinum regimens, evaluate patient preference and track time savings. Limitations include the retrospective, single center design of the study.

Conclusion: The discontinuation of pre-medications is safe and feasible if a patient has not experienced an HSR during the first or second dose of paclitaxel. Omission of pre-medications has substantial time saving implications for chemotherapy chair time.

Keywords: Hypersensitivity reactions, paclitaxel, pre-medications, discontinuation, evaluation

Targeted Deprescribing in an Outpatient Hemodialysis Unit to Decrease Polypharmacy: A Pilot Study

Safe Medication Practices Award, sponsored by HealthPRO Procurement Services Inc.

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Introduction: Patients on hemodialysis (HD) are exposed to polypharmacy by taking on average 12 medications per day, resulting in decreased adherence, and a higher risk of adverse drug events,

hospitalization and mortality. Deprescribing tools have been successfully implemented in an elderly inpatient population; however no such tool exists for an outpatient HD population.

Purpose: A pilot study was conducted to (1) develop deprescribing algorithms for target medications that have poor evidence for efficacy and safety in the HD population, (2) determine the effectiveness of these algorithms in decreasing polypharmacy when incorporated into current practice in the HD unit, (3) monitor patient safety and satisfaction throughout this initiative.

Methods: Five medication classes were selected (quinine, diuretics, alpha-1 blockers, proton pump inhibitors (PPI), and statins) and medication specific algorithms were developed and validated. In a single-center prospective observational pilot study, these algorithms were applied and monitored to three HD shifts.

Results: Out of the 60 patients screened, 60 potentially inappropriate medications were identified in 43 (72%) patients. Twelve study medications (six diuretics, five PPIs, and one alpha-blocker) in 10 (16.7%) patients met the eligibility criteria and were deprescribed. After 1 week, 2 patients were re-prescribed a PPI due to an increase in reflux symptoms after discontinuation. One patient was re-prescribed furosemide due to an increase in headaches. The remainder of the patients had no clinically significant change from baseline in specified monitoring parameters, thus were able to complete the respective deprescribing algorithm. The average number of medications per day decreased from 14.5 + 4.2 to 13.5 + 4.2 (n=10).

Conclusion: In this pilot study, it was revealed that a large portion of patients in the HD unit may be taking potentially inappropriate medications that require re-assessment using these deprescribing algorithms. When patients were deprescribed an inappropriate medication, patient safety and satisfaction was maintained throughout the monitoring period.

The Successful Implementation of a Fully Automated Robotic Intravenous System for Chemotherapy Preparation

Safe Medication Practices Award, sponsored by Medbuy Corporation

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Background: Using automated technology to increase safety for both patients and staff, and to increase efficiencies that have a high degree of precision, is in its early stages of development and implementation. Highly successful models to copy or emulate do not exist or are not published to act as a resource for those implementing these technologies. The implementation of robotic intravenous technology at the regional cancer centre at Royal Victoria Regional Health Centre was carefully documented and monitored so as not only to serve as a means to continuously have feed back to monitor progress and ensure success, but it has allowed for the sharing of the process to act as a model for other similar implementations.

Description: The model used employed a set-up phase that, while extensive and lengthy, ensured that all elements required for the phased-in approach for adding antineoplastic agents to the workflow, went smoothly, rapidly and with a rejection rate of patient specific doses of less than 1 % (0.63% versus the current industry standard of 2.2%). The production rate went from 10% of all antineoplastic and related product volumes to over 50% within a 4-month period.

Results: From a patient safety perspective, precision was within 1% for all current doses for 70% of all doses prepared and within 2% for over 95% of current doses prepared. In addition, the lack of exposure by staff to these hazardous products that they now did not have to prepare manually, and the decontamination of the products before leaving the sterile environment, resulted in a significant increase in staff safety.

Conclusion: This showed that this technology was not only safe, but also highly efficient.

Optimized Dosing of Cefazolin in Patients on Nocturnal Home Hemodialysis (oral presentation)

Specialties in Pharmacy Practice Award, sponsored by Pharmascience Inc.

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Introduction: Nocturnal hemodialysis (NHD) is an increasingly popular dialysis modality with demonstrated cardiovascular benefits; however infection remains a common complication. Antimicrobial dosing data are unknown for NHD.

Methods: Prospective, open-label, pharmacokinetic study of cefazolin during NHD. Fifteen patients received a 2g intravenous (IV) infusion of cefazolin immediately after NHD on day one and a second dose after NHD on day two. Blood samples were drawn at 0, 60, 180, and 360 minutes during hemodialysis (HD) and 0, 30, and 60 minutes post-infusion of cefazolin on day two. Dialysate samples were collected at 0, 180, and 360 minutes during HD on day 2. Samples were analyzed by high-performance liquid chromatography. Pharmacokinetic parameters were determined. Pharmacokinetic modeling was used to assess optimal dosage regimens.

Results: Median cefazolin clearance was 1.65L/hr (IQR: 1.36-2.19L/hr) and half-life was 3.44hrs (IQR: 2.93-4.36hrs) during NHD. The percentage of cefazolin removed from blood in 8-hour NHD session was 80%. Model-predicted steady-state cefazolin concentrations for an 8-hour NHD showed current dosing regimen, 2g followed by 1g IV after each NHD, achieved target concentrations of 6 x minimum inhibitory concentration (MIC) breakpoint of 8 mg/L, for *Staphylococcus* specie, for at least 50% of the dosing interval in a 70-kg individual.

Conclusion: Cefazolin clearance in NHD is slower than clearance rates reported for high-flux conventional hemodialysis; however, NHD has a longer hemodialysis duration leading to more drug removal. Modeling suggests that the current dosing regimen, 2g load followed by 1g IV after each NHD is adequate to reach recommended pharmacodynamic targets.

Effectiveness of Extracurricular Journal Clubs on Pharmacy Students' Learning of Evidence-based Medicine and Critical Appraisal

Teaching, Learning and Education Award, sponsored by Eli Lilly Canada Inc.

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Background: In hospital pharmacy practice, journal club (JC) often serves as a means of knowledge exchange among clinicians for the application of evidence to patient care.

Objective: We simulated JC in school with the objective of studying the effectiveness of voluntary student-driven JC in the learning of evidence-based medicine (EBM) and critical appraisal (CA) in undergraduate pharmacy students.

Methods: Eight one-hour JC sessions were organized by students in two consecutive academic terms as extracurricular activities. Attendance and presentations by students were voluntary. Students who attended JC were asked to complete an online questionnaire to self-report their learning and understanding of EBM and CA concepts. JC presenters were invited to focus groups to share their feedback and learning on EBM and CA skills.

Results: Attendance of each JC ranged from 25 to 50 students. 28 students completed the online questionnaire. After attending JC, 57% students agreed or strongly agreed that they were able to critically appraise primary literature in a timely fashion; 68% believed that they were able to formulate clinically-relevant conclusions from research studies; and 57% were confident in presenting clinical decisions based on assessment of a research study. We conducted three focus groups with 22 student presenters and a thematic analysis was performed on the transcribed data. Student presenters found themselves more proactive in seeking evidence-based clinical decisions. They strived for continuous development of their CA skills and recognized the importance of critically analyzing methods and results presented in clinical trials.

Conclusion: Traditional didactic teaching/learning in classroom serves as an introduction to EBM and CA. JC offered pharmacy students a platform to further practice and apply their knowledge on EBM and CA skills. Students need to continuously practice these skills in order to be prepared as a medication therapy expert capable of evaluating and applying EBM in practice.