2011 CSHP National Awards Program Winners
Programme national des prix 2011 de la SCPH : lauréats et lauréates

The winner of the ***Distinguished Service Award*** (sponsored by Janssen Inc.) is **Myrella Roy** (Ottawa, ON).

The winner of the ***Isabel E. Stauffer Meritorious Service Award*** (sponsored by Pharmaceutical Partners of Canada Inc.) is **John McBride** (Ontario Branch).

The winners of the ***New Hospital Pharmacy Practitioner Award*** (sponsored by Sandoz Canada Inc.) are **Zack Dumont** (Regina, SK) and **Shanna Trenaman** (Dartmouth, NS).

The winners of the ***Hospital Pharmacy Student Award*** (sponsored by the Canadian Society of Hospital Pharmacists [CSHP] and the Canadian Association of Pharmacy Students and Interns [CAPSI]) are **Jessica Gagatek** (Saskatoon, SK) and **Timothy Leung** (Edmonton, AB).

Management and Leadership Best Practices Award
Sponsored by **Apotex Inc.**

1. Development of a Pediatric Emergency Department Outreach Website to Promote Standardized Pediatric Medication Prescribing across a Local Health Integration Network (completed at the Children's Hospital of Eastern Ontario, Ottawa, ON)

Danica Irwin and Régis Vaillancourt

Sponsored by **Hospira Healthcare Corporation**

2. Development and Implementation of a Regional Program for the Safe Handling of Hazardous Drugs by Hospital Pharmacies (completed at the Winnipeg Regional Health Authority, Winnipeg, MB)

Barbara Sproll, Cenzina Caligiuri, Sheri Dyck, and Blair Seifert

Patient Care Enhancement Award
Sponsored by **AstraZeneca Canada Inc.**

1. A Reliable Method of Obtaining Blood Samples from Implantable Central Venous Catheters for Determination of Plasma Gentamicin Concentrations (completed at The Hospital for Sick Children, Toronto, ON)

Jennifer Chen, Sabrina Boodhan, Sara Rosaline Lavoratore, and L. Lee Dupuis

Sponsored by **TEVA Canada Ltd.**

2. An Analysis of QTc Prolonging Medication Orders Belonging to Intensive and Cardiac Care Unit Patients with Pre-existing QTc Prolongation (QTIPPP Study) (completed at Burnaby Hospital, Burnaby, BC)

Sayako Yokoyama, Damen Man, and Vincent H. Mabasa

Pharmacotherapy Best Practices Award
Sponsored by **Merck Frosst Canada Ltd.**

1. Development and Evaluation of an Instrument for the Critical Appraisal of Randomized Controlled Trials of Natural Products (completed at the College of Pharmacy, Dalhousie University, Halifax, NS)

Anne Marie Whelan

Sponsored by **Pfizer Canada Ltd.**

2. Single versus Double Gram Negative Coverage Empiric Antibiotic Therapy of Febrile Neutropenia in Pediatric Patients (completed at BC Children's Hospital, Vancouver, BC)

Shane Pawluk, Roberta Esau, and Roxane Carr

Safe Medication Practices Award
Sponsored by **Baxter Corporation**

1. What Is the Impact of a Centralized Provincial Drug Profile Viewer on the Quality and Efficiency of Patient Admission Medication Reconciliation? A Randomized Controlled Trial (completed at University Health Network, Toronto, ON)

Olavo Fernandes, Anna W. Lee, Gary Wong, Jennifer Harrison, Michael Wong, and Margaret Colquhoun

Sponsored by **Hospira Healthcare Corporation**

2. Medication Reconciliation during Internal Hospital Transfer and Impact of Computerized Prescriber Order Entry (completed at University Health Network, Toronto, ON)

Justin Lee, Kori Leblanc, Olavo Fernandes, Jin-Hyeun Huh, Gary Wong, Jana Bajcar, and Jennifer Harrison

Specialties in Pharmacy Practice Award
Sponsored by **Bristol-Myers Squibb Canada**

1. Development and Validation of Limited Sampling Strategies for Tacrolimus and Mycophenolate in Steroid-Free Renal Transplant Regimens (completed at Vancouver General Hospital, Vancouver, BC)

Eric Poulin, Erica D. Greanya, Nilufar Partovi, and Mary H. H. Ensom

Sponsored by **Hospira Healthcare Corporation**

2. Development of a Novel Vancomycin Dosing Nomogram for Achieving High-Target Pre-Dose Levels at Two Major Canadian Teaching Hospitals (completed at Vancouver General Hospital and St. Paul's Hospital, Vancouver, BC)

Rosanne Thalakada, Tim T. Y. Lau, Michael Legal, and Mary H. H. Ensom

Teaching, Learning, and Education Award
Sponsored by **Eli Lilly Canada**

1. International Pictogram Project for the Labelling of Medication (international collaboration completed at multiple sites)

Régis Vaillancourt and Sylvain Grenier

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 gagnant des prix à une révision linguistique et les publie ici tels que remis par les auteurs.*

Development of a Pediatric Emergency Department Outreach Website to Promote Standardized Pediatric Medication Prescribing Across a Local Health Integration Network

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

Danica Irwin, Régis Vaillancourt, Brenda Caldwell
Children's Hospital of Eastern Ontario (CHEO), Ottawa, ON

Rationale: Standard Emergency Department (ED) challenges of overcrowding, high acuity and diagnostic uncertainty are compounded in the pediatric ED setting by the challenges of appropriate drug therapy and dose selection for patients ranging from newborns to adolescents. In 2007, an ED Outreach Program was launched to promote standardized, evidence-based pediatric care across the LHIN through the sharing of the author's pediatric ED expertise with the regions 17 community hospital EDs, through a combination of education, support and resources.
Objective: To develop an ED Outreach Website to provide easy and timely access to materials and resources to improve patient care.
Methods: The program focuses on the drug and medical management of the most common pediatric ED visits (ie. asthma, bronchiolitis, croup, gastroenteritis) as well as less common but challenging conditions (ie. diabetic ketoacidosis, sepsis, shock, resuscitations) all of which require safe and appropriate medication management. Medication related resources to enhance patient care and health care practitioners' knowledge of pediatric drug therapy include: standardized preprinted orders, critical pathways, electronic dose calculation programs, pediatric and neonatal drug therapy manuals, patient education handouts, and educational videos).
Results: Response to the site has been consistently positive as measure by website hits (360 per month), interviews with community hospital administrators and ED staff, website access request to the site by non-LHIN hospitals and private clinics, and by changes in drug formulary selection at community hospitals.
Conclusion: The site allows access to current pediatric drug resources and tools to promote safe and rational medication prescribing.

Development and Implementation of a Regional Program for the Safe Handling of Hazardous Drugs by Hospital Pharmacies

Management and Leadership Best Practices Award, sponsored by Hospira Healthcare Corporation

Barbara Sproll, Cenzina Caligiuri, Sheri Dyck, Blair Seifert
Winnipeg Regional Health Authority – Pharmacy Program, Winnipeg, MB

Rationale: Historically, great care has been exercised in the handling of cytotoxic medications. Although other medications have been acknowledged as potentially hazardous, most facilities do not have processes to identify and ensure the consistent safe handling of these agents.
Objective: The goal of this project was to develop and implement a regional program for the safe handling of hazardous drugs for the Winnipeg Regional Health Authority (WRHA). This program would define a process for pharmacy staff to identify all medications that may pose a hazard to those handling them and provide procedures for safe receiving, storing, preparing, distributing, administering and disposing of these drugs.
Method: We performed a literature search and reviewed the Canadian Society of Hospital Pharmacists (CSHP) and the American Society of Health-System Pharmacists (ASHP) guidelines for handling of hazardous drugs. We reviewed the resource materials and website of the National Institute for Occupational Safety and Health (NIOSH) and surveyed other Canadian and select American hospitals for pertinent policies and procedures. This information was used to identify medications requiring safe handling practices and to develop regional pharmacy procedures for the receiving, storing, preparing, distributing, administering and disposing of these drugs. We also developed easily accessible tools and a training program to guide staff through the safe handling procedures.
Results: Medications that may pose a hazard to those handling them were categorized as cytotoxic or non-cytotoxic hazardous and entered in the Hazardous Drug List. The project deliverables include: a "Pharmacy Safe Handling of Drugs" wall chart, a list of cytotoxic and non-cytotoxic hazardous drugs, a pharmacy resource manual, safe and preferred methods for altering dosage forms (e.g. compounding instructions) to accommodate patient needs, and a regional education and implementation process. Processes for updating drug lists and resources and annual re-certification of pharmacy staff were also developed. All information was posted on the WRHA web site. Education, to date, has focused on pharmacy staff as changes in work routines were introduced.
Conclusion: The WRHA Program for the Safe Handling of Hazardous Drugs initiative provides complete, easily accessible information to pharmacy personnel on the safe handling of hazardous and potentially hazardous drugs.

A Reliable Method of Obtaining Blood Samples from Implantable Central Venous Catheters for Determination of Plasma Gentamicin Concentrations

Patient Care Enhancement Award, sponsored by AstraZeneca Canada Inc.

Jennifer Chen, Sabrina Boodhan, Munira Nanji, Ann Chang, Santhosh Sekharan, Sara Rosaline Lavoratore, Leonardo R. Brandão, L. Lee Dupuis
The Hospital for Sick Children, Toronto, ON
Jeffrey M. Skolnik, The Children's Hospital of Philadelphia, Philadelphia PA

Rationale: Obtaining blood samples from children is an activity which impacts patients, families and caregivers daily. In children with cancer, blood samples are routinely drawn from subcutaneous central venous catheters (ports) using the discard method, finger lancet punctures (FLPs) or venipunctures to determine the plasma gentamicin concentrations (PGCs) required to individualize gentamicin dosing. However, the discard sampling method produces unreliable results and contributes to iatrogenic blood loss while FLPs/venipunctures are painful. Alternative methods of sampling are needed.
Objective: This study evaluated the extent of agreement between PGCs determined in samples obtained via ports using the push-pull method and FLPs in children with febrile neutropenia.
Methods: Children with cancer with single or double-lumen ports who were receiving gentamicin participated in this prospective study. PGCs were determined in blood samples obtained via the port using the push-pull method and via FLP. Agreement between PGCs determined in port and FLP blood samples was assessed by the intraclass correlation coefficient (ICC), Bland-Altman analysis and comparison of simulated dose adjustments. Changes in port patency were tracked for 1 week following port sampling. The acceptable targets for the lower limit of the ICC and Bland-Altman limits of agreement were ≥ 0.80 and $\pm 6\%$, respectively. Differences in simulated dose adjustments calculated using either the port or FLP samples that differed by > 20% were considered to be clinically significant.
Results: Agreement between the 44 FLP and port sample pairs collected was excellent (ICC: 0.991; 0.984 to 0.995). Port PGCs were 4.7% lower than PGCs determined in FLP samples. The observed limits of

agreement were -20.5% to 11%. Differences in dose adjustments calculated using port and FLP PGCs were clinically insignificant in the majority (88.4%) of cases. No changes in port patency were observed in the week following the port sample.
Conclusion: The push-pull method of blood sampling is a reliable and safe option for obtaining PGC results in children with ports.

An Analysis of QTc prolonging medication orders belonging to Intensive and cardiac care unit Patients with Pre-existing QTc Prolongation (QTIPPP Study)

Patient Care Enhancement Award, sponsored by TEVA Canada Ltd.

Sayako Yokoyama, Royal Columbian Hospital, New Westminster, BC
Damen Man, Vincent H. Mabasa, John Martyn, Burnaby Hospital, Burnaby, BC

Rationale: A prolonged QTc interval on the electrocardiogram (ECG) is often used as a surrogate marker for development of ventricular arrhythmias. Medications that can prolong the QTc interval can increase the risk for cardiac complications, although the exact incidence is largely unknown and is multifactorial. However, it is reasonable to consider that administration of QTc prolonging medications to patients who already have a prolonged QTc will further increase their risk of developing cardiac consequences. This study was designed to examine the occurrence of these scenarios and explore the potential role for clinical pharmacist involvement to minimize such risks.
Objective: The primary objective was to identify the number of patients who have a pre-existing prolonged QTc out of all patients who are ordered QTc prolonging medications. Secondary objectives included observing patterns of clinical pharmacist intervention for patients who were ordered QTc prolonging medications. Additionally, any further QTc prolongation and development of cardiac events in the population of interest were documented.
Methods: An observational, prospective, quality assessment study was conducted over four months. Patients included were adults admitted to cardiac monitored beds, who were ordered one or more QTc prolonging medication(s) and had a QTc of >450msec on the most recent 12-lead ECG prior to the medication order.
Results: Two hundred and seven patients were identified as having a QTc prolonging medication ordered. Fifty-three (26%) of these patients had a pre-existing prolonged QTc. Fifty one (25%) of patients received minimum one dose of QTc prolonging medication, and were monitored daily for complications. Nine (18%) of daily monitored patients experienced at least one cardiac event.
Conclusion: Twenty-six percent of patients who were ordered QTc prolonging medications had a pre-existing prolonged QTc interval, suggesting a role for clinical pharmacists' involvement in reducing risk of subsequent complications.

Development and Evaluation of an Instrument for the Critical Appraisal of Randomized Controlled Trials of Natural Products

Pharmacotherapy Best Practices Award, sponsored by Merck Frosst Canada Ltd.

Tannis M Jurgens, Anne Marie Whelan
College of Pharmacy, Dalhousie University, Halifax, NS

Rationale: The efficacy of natural products (NPs) is being evaluated using randomized controlled trials (RCTs) with increasing frequency, yet a search of the literature did not identify a widely accepted critical appraisal instrument developed specifically for use with NPs. Such an instrument would aid pharmacists and other health care providers in evaluating the evidence from trials of NPs to determine the quality of the evidence and applicability of results to their patients.
Objectives: The objective of this project was to develop and evaluate a critical appraisal instrument sufficiently rigorous to be used in evaluating RCTs of conventional medicines with a section specific for use with single entity NPs, including herbs and natural sourced chemicals.
Methods: Three phases of the project included: 1) a Delphi process to determine items essential in describing the identity of an NP; 2) compiling a list of non-NP items important for evaluating the quality of an RCT using systematic review methodology; and 3) conducting a field test to compare the new instrument to a published instrument for usefulness in evaluating the quality of 3 RCTs of a NP and in applying results to practice.
Results: Two Delphi rounds resulted in a list of 15 items essential in describing NPs. Seventeen non-NP item categories were identified from the systematic review. The new assessment instrument was assembled based on content of the two lists and the addition of a Review's Conclusion section. The field test of the new instrument showed good criterion validity. Participants found it useful in translating evidence from RCTs to practice.
Conclusions: A new instrument for the critical appraisal of RCTs of NPs was developed and tested that is distinct from other available assessment instruments in its systematic development and validation. The instrument is being used by pharmacists as well as academics teaching students critical appraisal skills.

Single versus Double Gram Negative Coverage Empiric Antibiotic Therapy of Febrile Neutropenia in Pediatric Patients

Pharmacotherapy Best Practices Award, sponsored by Pfizer Canada Ltd.

Shane Pawluk, Roberta Esau, Claire Aston, Rod Rassekh, Roxane Carr
BC Children's Hospital, Vancouver, BC

Rationale: In adult patient with febrile neutropenia, there is no difference in efficacy between single and double gram negative coverage antibiotic regimens. Outcomes of these different antibiotic regimens have not been assessed in the pediatric population.
Objectives: To compare the effectiveness and safety of a double coverage gram negative antibiotic regimen to a single coverage gram negative antibiotic regimen in pediatric febrile neutropenia patients.
Methods: Retrospective review of patients who received piperacillin-tazobactam with or without gentamicin. Data collected using a standardized data collection form. Wilcoxon Rank-Sum Test was used to compare duration of fever and change in serum creatinine between the two treatment groups.
Results: A total of 60 patients were included in this study. Mean duration of fever was 3.5 days in the double coverage group and 3.1 days in the single coverage group ($p = 0.5$). Addition of vancomycin was similar in double and single coverage groups (16.7% vs. 13.3%). Addition of gram negative coverage antibiotics occurred more frequently in the single coverage group. Mean percent increase in serum creatinine was 25% in the double coverage group and 10% in the single coverage group ($p = 0.03$).
Conclusion: A similar duration of fever was observed in both treatment groups. The single coverage group received additional gram negative antibiotics more frequently than the double coverage group. Although statistically significant, the change in serum creatinine in the double gram negative coverage group compared to the single coverage group was not clinically significant.

What Is the Impact of a Centralized Provincial Drug Profile Viewer on the Quality and Efficiency of Patient Admission Medication Reconciliation? A Randomized Controlled Trial

Safe Medication Practices Award, sponsored by Baxter Corporation

O. Fernandes, E. Etchells, A.W. Lee, V. Siu, C. Bell, G. Wong, A. Holbrook, B. Hamandi, J. Harrison, M. Wong, M. Colquhoun
University Health Network; Sunnybrook Health Sciences Centre; St. Michael's Hospital; St. Joseph's Healthcare Hamilton/Hamilton Health Sciences Centre; ISMP Canada; Faculty of Pharmacy and Faculty of Medicine, University of Toronto; Department of Medicine, McMaster University

Rationale/Objectives: The use of provincial prescription databases to assist clinicians in obtaining medication histories has been advocated but not systematically evaluated in a randomized controlled trial. This investigation set out to evaluate whether a centralized provincial medication database (drug profile viewer - DPV) adds unique value (quality and efficiency) to a structured best possible medication history (BPMH) clinician process for admission medication reconciliation.
Design/Methods: The setting for this prospective, dual centre, randomized controlled trial was two tertiary care teaching hospital pre-admission clinics which already employed a pro-active, sustained interprofessional medication reconciliation model. Consecutive patients who had an elective surgery pre-admission clinic appointment were eligible for inclusion. Eligible patients were randomly assigned to the intervention arm (DPV access) or standard care (control without DPV access). The primary endpoint was the number of patients with at least one BPMH medication discrepancy (assessed by an independent observer blinded to treatment assignment).
Results: Between August 8 to November 17, 2009, 2642 patients were screened for eligibility, and subsequently 410 patients met inclusion criteria, were consented and enrolled. For the primary endpoint, 11/212 patients had at least one unintentional BPMH medication discrepancy in the intervention arm, compared to 56/198 patients in the standard care arm (5.2% vs. 28.3%; $p<0.001$; NNT 4.3). For the intervention, 2/212 patients had at least one potential adverse drug events (PADE) vs. 16/198 patients in standard care (0.9% vs. 8.1%; NNT 13.8). A time motion study did not detect significant differences for the mean total clinician time to conduct a BPMH.
Conclusion: Clinician patient assessment that combines a structured pro-active BPMH process with the information from a centralized provincial drug profile viewer for pre-admission elective surgical patients appears to enhance the quality of admission reconciliation practices by significantly reducing the number of patients with BPMH discrepancies and PADEs.

Medication Reconciliation During Internal Hospital Transfer and Impact of Computerized Prescriber Order Entry

Safe Medication Practices Award, sponsored by Hospira Healthcare Corporation

Justin Lee[1], Kori Leblanc[2], Olavo Fernandes[2], Jin-Hyeun Huh[3], Gary Wong[2], Bassem Hamandi[2], Neil Lazar[2], Dante Morra[2], Jana Bajcar[4,5], Jennifer Harrison[2]
[1]McMaster University, Hamilton, ON
[2]Toronto General Hospital, University Health Network, Toronto, ON
[3]Toronto Western Hospital, University Health Network, Toronto, ON
[4]Sunnybrook Health Sciences Centre, Toronto, ON
[5]Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, ON

Rationale: Internal hospital transfer is a vulnerable moment where patients are at high risk of medication discrepancies that can result in clinically significant harm, medication errors and adverse drug events.
Methods: All patients transferred between 10 inpatient units at two tertiary care hospitals were prospectively assessed to identify discrepancies. Interfaces included transfers between: (1) units that both used Paper-based medication ordering systems; (2) units that both used CPOE-based systems; and (3) Paper-based and CPOE-based units ('Hybrid' transfer). The primary endpoint was the number of patients with at least one unintentional medication discrepancy during internal hospital transfer. Discrepancies were identified through assessment and comparison of a best possible medication transfer list with the actual transfer orders. Secondary objectives were to characterize and assess the potential clinical impact and severity of unintentional discrepancies, determine the time required for transfer reconciliation and to investigate the influence of CPOE on the frequency of discrepancies.
Results: Overall, 190 patients were screened and 129 patients were included. Eighty patients (62.0%) had at least one unintentional medication discrepancy at the time of transfer and the most common discrepancy was medication omission (55.6%). Forty-seven patients (36.4%) had at least one unintentional discrepancy with the potential to cause discomfort and/or clinical deterioration. The risk of discrepancies was present regardless of the medication-ordering system (Paper, CPOE or Hybrid).
Conclusion: Clinically significant medication discrepancies occur commonly during internal hospital transfer. A structured, collaborative and clearly defined medication reconciliation process is needed to allow clinicians to effectively prevent internal transfer discrepancies and patient harm.

Development and Validation of Limited Sampling Strategies for Tacrolimus and Mycophenolate in Steroid-Free Renal Transplant Regimens

Specialties in Pharmacy Practice Award, sponsored by Bristol-Myers Squibb Canada

Eric Poulin, Vancouver Coastal Health/Providence Healthcare, Vancouver, BC
Erica D. Greanya, Vancouver Coastal Health Authority and Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC
Nilufar Partovi, Vancouver Coastal Health Authority and Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC
R Jean Shapiro, Vancouver General Hospital and Faculty of Medicine, University of British Columbia, Vancouver, BC
Mai Al-Khatib, Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC
Mary H H Ensom, Faculty of Pharmaceutical Sciences, University of British Columbia, and Children's and Women's Health Centre of British Columbia, Vancouver, BC

Rationale: Little is known about the clinical impact of steroid withdrawal on the disposition of mainstay immunosuppressive agents such as tacrolimus (TAC) and mycophenolate mofetil (MMF).
Purpose: (1)Develop and validate limited sampling strategies (LSSs) for tacrolimus (TAC) and mycophenolic acid (MPA) in a renal transplant population not receiving corticosteroids; (2)Evaluate predictive performance of published LSSs (for steroid-based regimens) in our renal transplant population.
Methods: Following written informed consent and upon administration of steady-state morning TAC and mycophenolate mofetil doses, blood samples were collected at 0,0.5,1,2,4,6,8,10, and 12h from 28 stable renal transplant recipients; concentrations were measured by validated high-performance liquid chromatography methods and

area-under-the-curve (AUC) by trapezoidal method. TAC LSSs were developed and validated via multiple regression analysis (MRA) using the 2-group method (index n=18;validation n=10) and MPA LSSs using the jackknife method (n=28). Potential LSSs were restricted to ones having $r^2 \geq 0.8$ (TAC) or $r^2 \geq 0.7$ (MPA) and ≤3 time points within 2h (TAC) or 4h (MPA) post-dose. Derived equations were validated for predictive performance, with preset criteria for bias and precision of within ±15%. Other TAC and MPA LSSs were tested using our data.

Results: For TAC, three 3-concentration, one 2-concentration, and one 1-concentration model using concentrations from 0-2h met pre-specified criteria. The best equations were: **TAC AUC= 10.338+7.739C0+3.589C2** (r^2=0.956,bias=-3.37%,precision=4.65%) and **TAC AUC=29.479+5.016C2** (r^2=0.862,bias=3.15%, precision=9.72%). For MPA, only one model identified for MPA met pre-specified criteria: **MPA AUC=9.328+1.311C1+1.455C2+2.901C4** (r^2=0.838,bias=-3.78%,precision=14.89). One published TAC (and no MPA) LSS in renal transplant recipients on steroid-based regimens met preset criteria for bias and precision.

Conclusions: To our knowledge, this was the first study to develop and validate LSSs for TAC and MPA in steroid-free renal transplant recipients. These LSSs can be used to accurately predict TAC and MPA AUCs for patients on a steroid-free regimen. The commonly used MPA LSS is based on a steroid regimen and was not predictive for our steroid-free patients. Corticosteroids may have an impact on predictive performance of MPA LSSs. These hypotheses-generating results warrant further study.

Development of a Novel Vancomycin Dosing Nomogram for Achieving High-Target Pre-Dose Levels at Two Major Canadian Teaching Hospitals

Specialties in Pharmacy Practice Award, sponsored by Hospira Healthcare Corporation

Rosanne Thalakada, Vancouver General Hospital, Vancouver, BC
Tim T. Y. Lau, Vancouver General Hospital, Vancouver, BC
Michael Legal, St. Paul's Hospital, Vancouver, BC
Joshua Batterink, Vancouver Coastal Health–Providence Health Care, Vancouver, BC
Mary H. H. Ensom, Children's and Women's Health Centre of British Columbia, Vancouver, BC

Rationale: Recent clinical practice guidelines now recommend a target vancomcyin pre-dose level of 15-20 mg/L for invasive infections. Most existing nomograms are designed to achieve lower targets (5-15 mg/L). There is a need for validated nomograms to achieve high target pre-dose levels of 15-20 mg/L.

Objectives: To develop and validate an initial vancomycin dosing nomogram to achieve pre-dose levels of 15-20 mg/L at St. Paul's Hospital and Vancouver General Hospital.

Methods: This was a retrospective study conducted at St. Paul's Hospital and Vancouver General Hospital. Patients who had achieved a pre-dose vancomycin level of 15-20 mg/L were identified. Patient demographics and relevant clinical data were collected. Multiple linear regression was used to develop a vancomycin dosing nomogram at each site. An integrated nomogram was constructed by merging the data from both hospitals. The nomograms were validated in unique sets of patients at each institution. Predictive success of each nomogram was deemed significantly different from another nomogram if $p<0.05$ via Chi-square test.

Results: Sixty-eight patients were used for St. Paul's Hospital nomogram development and 78 patients were used for Vancouver General Hospital's nomogram development. Both age and serum creatinine had a significant effect on the predicted dosage interval ($p<0.001$). Validation in a total of 80 test patients showed that the integrated nomogram had the highest predictive success in the St. Paul's Hospital test group and the second highest success in the Vancouver General Hospital group with 66% and 64% correctly predicted intervals, respectively ($p>0.05$).

Conclusion: A novel vancomycin dosing nomogram has been developed and successfully validated at two major Canadian teaching hospitals. This integrated nomogram will assist clinicians in selecting appropriate initial vancomycin regimens using age and serum creatinine to achieve high target levels of 15-20 mg/L. Expansion of the nomogram to include patients with impaired renal function in addition to prospective evaluation of the nomogram is underway.

International Pictogram Project for the Labelling of Medication

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

Régis Vaillancourt, Jane Dawson, Elena Pascuet, Sylvain Grenier
Children's Hospital of Eastern Ontario (CHEO), Ottawa, ON
Canadian Forces Health Services Group, Ottawa, ON
Defence Health Directorate, Headquarters New Zealand Defence Force, Wellington, New Zealand

Rationale: Low health literacy and/or language barriers exist between patients and health care providers, both within Canada and internationally. Developing culture-specific pictograms, along with written and verbal counseling, into an easy-to-use program framework is essential for the comprehension of drug information by patients.

Objectives:

1. To design culture-sensitive pictograms for the labeling of medication.
2. To validate pictograms for the labeling of medication for culture-specificity.
3. To create and disseminate application tools that incorporates the use of pictograms into clinical or practical settings for patient counseling.
4. To develop educational tools for the teaching of healthcare professionals on the use of pictograms in their setting.

Methods: International partners collaborated using a multi-step approach:

1. Design of pictograms for the labeling of medication
2. Validate pictograms for the labeling of medication for culture-specificity
3. Create and disseminate application tools that incorporates the use of pictograms into clinical or practical settings for patient counseling.
4. Develop educational tools for the teaching of healthcare professionals on the use of pictograms in their setting.

Results: Culture-sensitive pictograms testing was completed using either 1-on-1 patient interviews or by focus groups within various geographical regions. Based on feedback, pictograms have been created and approved for cultures specific to Finland, United Kingdom, Egypt, Singapore, Hungary, Australia, Indonesia, Serbia and Taiwan, Mexico, Mali, and for First Nation communities. Healthcare providers can learn about use of pictograms using the pictogram how-to instructions and by watching the teaching video available in either English or French.

Conclusion: The pictogram initiative is an internationally successful program implemented at multiple sites. This project has positive implications to improve patient safety and opportunities for training and education of healthcare providers for addressing barriers in communication when providing patient counseling.