

## 2009 CSHP National Awards Program Winners

### Programme national des prix 2009 de la SCPH : lauréats et lauréates

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

**Vincent H. Mabasa, Douglas L. Malyuk, Robert M. Balen, Anthony Tung**

Clinical Pharmacy Support Technicians: Increasing Pharmaceutical Care Practice Efficiency in the Intensive Care Unit Setting

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

**Sheri Koshman, Mark Makowsky, Ross Tsuyuki**

Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment: The COLLABORATE Trial

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

**Robert M. Balen, Peter S. Loewen, Matthew O. Wiens, Kerry Wilbur, Peter J. Zed**

Incidence, Severity and Preventability of Drug-Related Visits to the Emergency Department: A Prospective Study

**Patient Care Enhancement Award,** sponsored by **TEVA Novopharm**

**Barb Evans, James Lacey, Jane Richardson**

An Evaluation of the Accuracy and Consistency of Patient Medication Information at Hospital Discharge

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

**Winnie W.Y. Chan, Peter J. Zed**

Efficacy, Safety and Patient Satisfaction of Propofol for Procedural Sedation and Analgesia in the Emergency Department: A Prospective Study

**Pharmacotherapy Best Practices Award,** sponsored by **Pfizer Canada**

**Adil Virani**

Pharmacists Making House Calls: An Innovative Role or Overkill?

**Safe Medication Practices Award,** sponsored by **Baxter Corporation**

**James Conklin, Mário de Lemos, Dennis Jang, Dianne Kaptay, Lynne Nakashima, Susan Walisser**

Improving Risk Management with the Development of a Best Evidence-Based, Provincial Chemotherapy Preparation and Stability Chart

**Safe Medication Practices Award,** sponsored by **Hospira Healthcare Corporation**

**Danica Irwin, Régis Vaillancourt, Elaine Wong**

Standard Concentrations of High Alert Drug Infusions across Paediatric Acute Care

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

**Jennifer Tam, Mary H. H. Ensom, Roxane Carr**

Pharmacokinetics of Vancomycin and Gentamicin in Pediatric Patients on Extracorporeal Life Support

**Specialties in Pharmacy Practice Award,** sponsored by **Hospira Healthcare Corporation**

**Suzanne C. M. Taylor, Vincent H. Mabasa**

Verification of Imatinib Cost-Effectiveness in Advanced Gastrointestinal Stromal Tumor in British Columbia

**Teaching, Learning, and Education Award,** sponsored by **Wyeth Pharmaceuticals**

**Jean-François Bussi eres**

D veloppement d'un livre pour l'enseignement de la l gislation en pharmacie

*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 hospitali ere n'a pas soumis les r sum s gagnant des prix   une r vision linguistique et les publie ici tels que remis par les auteurs.*

The winner of the **Distinguished Service Award** (sponsored by Ortho Biotech Division of Janssen-Ortho Inc.) is **Robin J. Ensom**.

The winner of the **Isabel E. Stauffer Meritorious Service Award** (sponsored by Pharmaceutical Partners of Canada Inc.) is **Lynda J. Chilibeck**.

The winners of the **New Hospital Pharmacy Practitioner Award** (sponsored by Sandoz Canada Inc.) are **Eva Cho** and **Lynette R. Kolodziejak**.

The winner 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]) is **Amy M. Grossberndt**.



## Clinical Pharmacy Support Technicians: Increasing Pharmaceutical Care Practice Efficiency in the Intensive Care Unit Setting

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

Vincent H. Mabasa<sup>1</sup>, Douglas L. Malyuk<sup>1</sup>, Robert M. Balen<sup>1</sup>, Anthony Tung<sup>2</sup>, Tricia R. Nicholls<sup>1</sup>, Nicole L. Rahiman<sup>1</sup>

<sup>1</sup>Fraser Health Authority, Royal Columbian Hospital, New Westminster, BC

<sup>2</sup>Fraser Health Authority, Surrey Memorial Hospital, Surrey, BC

**Purpose:** Impediments to optimal delivery of pharmaceutical care include pharmacist shortages, increasing patient acuity and the associated workload. Pharmacy technicians are well positioned to augment clinical service delivery because of their systems and medication use process knowledge. Technicians can support decentralized clinical pharmacists by performing information gathering and other technical tasks required for making drug therapy decisions. We hypothesized that incorporating a Clinical Pharmacy Support Technician (CPST) in our 26-bed adult tertiary level Intensive Care Unit (ICU) team would improve pharmacists' work efficiency.

**Methods:** Patients in the ICU are supported by 2 multidisciplinary health care teams. Each team includes a clinical pharmacy specialist. Pharmacy technicians hired into the clinical support role were experienced with the hospital medication distribution system. CPST training is supervised by the ICU pharmacist and clinical practice leader. Training activities included: job shadowing, supervised guided activities, and group discussions. Protocols and procedures were developed based on the expected competencies. Monthly meetings are arranged for continuing education, skills upgrading, and quality assurance. CPST training includes activities which would best support the ICU pharmacists. These activities include the following: patient specific data collection and monitoring form documentation, screening and tracking patients progress according to targeted parameters, assisted therapeutic drug monitoring services, ward-based troubleshooting, IV compatibility assessment, adverse drug reaction reporting, student orientation, sick call coverage, and traditional medication distribution support in the pharmacy dispensary.

**Results:** The CPST program improved work efficiencies in the delivery of pharmaceutical care by reducing the amount of time required for a pharmacist to assess a patient, thereby increasing the number of patients assessed per day and increasing time for pharmacists to perform cognitive-based activities.

**Conclusion:** Clinical Pharmacy Support Technicians, when deployed optimally, are able to increase the work efficiency of pharmacists and ultimately have a role in improving patient outcomes.

**Key words:** pharmacy technician, clinical pharmacy support technician, critical care

## Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment: The COLLABORATE Trial

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

Mark Makowsky, Sheri Koshman, William Midodzi, Ross Tsuyuki  
EPICORE Centre/COMPRIS, University of Alberta, Edmonton, AB

**Background:** Medical inpatients are at risk of suboptimal health outcomes from adverse drug events and under-use of evidence-based therapies. We sought to determine if collaborative care including a team-based clinical pharmacist improves the quality of prescribed drug therapy and reduces hospital readmission.

**Methods:** Multicentre, quasi-randomized, controlled clinical trial. Consecutive patients admitted to 2 internal and 2 family medicine teams in 3 teaching hospitals between January 30th, 2006 and February 2nd, 2007 were included. Team care patients received proactive clinical pharmacist services (medication history, patient-care round participation, resolution of drug-related issues, and discharge counselling). Usual care patients received traditional reactive clinical pharmacist services. The primary outcome was the overall quality score measured retrospectively by a blinded chart reviewer using 20 indicators targeting 5 conditions. Secondary outcomes included 3 and 6 month readmission.

**Results:** A total of 452 patients (220 team care, 231 usual care, mean age: 74 yrs, 46% male) met eligibility criteria. Team care patients were more likely than usual care patients to receive care specified by the indicators overall (56.4% vs. 45.3%; adjusted mean difference: 10.4% (95% confidence interval [CI]: 4.9%, 15.7%) and for each targeted disease state except for heart failure. Team care patients experienced fewer readmissions at 3 months (36.2% vs. 45.5%; adjusted OR: 0.63, 95% CI 0.42, 0.94) but not at 6 months (50.7% vs. 56.3%; adjusted OR: 0.78, 95% CI 0.53, 1.15).

**Conclusions:** In patients admitted to internal and family medicine teams, team-based care including a clinical pharmacist, improved the overall quality of medication use and reduced rates of readmission.

**Key words:** Patient Care Team, Pharmacists, Internal Medicine, Family Medicine, Quality Indicators

## Incidence, Severity and Preventability of Drug-Related Visits to the Emergency Department: A Prospective Study

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

Peter J. Zed<sup>1</sup>, Riyad B. Abu-Laban<sup>2</sup>, Robert M. Balen<sup>3</sup>, Peter S. Loewen<sup>4</sup>, Corinne M. Hohf<sup>5</sup>, Jeffrey R. Brubacher<sup>6</sup>, Kerry Wilbur<sup>6</sup>, Matthew O. Wiens<sup>6</sup>, Leslie J. Samoy<sup>7</sup>, Katie Lacaria<sup>8</sup>, Roy A. Purssell<sup>9</sup>

<sup>1</sup>Capital Health & Dalhousie University, Halifax, NS

<sup>2</sup>Vancouver General Hospital & Faculty of Medicine, University of British Columbia, Vancouver, BC

<sup>3</sup>Royal Columbian Hospital & University of British Columbia, Vancouver, BC

<sup>4</sup>Vancouver Coastal Health-Providence Health Care & University of British Columbia, Vancouver, BC

<sup>5</sup>Qatar University, Doha, Qatar

<sup>6</sup>Chilliwack General Hospital, Chilliwack, BC

<sup>7</sup>Vancouver General Hospital, Vancouver, BC

**Background:** Medication-related visits to the emergency department are an important but poorly understood phenomenon. We sought to evaluate the frequency, severity, preventability and classification of drug-related visits to the emergency department of a large tertiary-care teaching hospital.

**Methods:** We performed a prospective, observational study of randomly selected adults presenting to the emergency department over a 12-week period. A drug-related emergency department visit was identified using pharmacist research assistant assessment and an emergency physician; discrepancies were adjudicated by two independent reviewers.

**Results:** Among the 1017 patients enrolled, a drug-related emergency department visit was identified in 122 patients (12.0%, 95%CI 10.1-14.2%) of which 83 (68.0%, 95%CI 59.0-76.2%) were deemed preventable. Severity was classified as mild, moderate and severe in 15.6%, 74.6% and 9.8% of patients, respectively. The most common reasons for drug-related visits were adverse drug reactions (39.3%), nonadherence (27.9%) and wrong/suboptimal drug (11.5%). The probability of admission for patients who presented with a drug-related visit compared to those whose visit was not drug-related was significantly higher (OR 2.18, 95%CI 1.46-3.27,  $p < 0.0001$ ) and if admitted the median (IQR) length of stay was longer (8.0 (23.5) days vs. 5.5 (10.0) days,  $p = 0.06$ ).

**Conclusion:** More than 1 in 9 emergency department visits are due to drug-related adverse events, a potentially preventable problem in our health care system.

**Key words:** adverse drug-related events, adverse events, emergency department, patient safety

## An Evaluation of the Accuracy and Consistency of Patient Medication Information at Hospital Discharge

**Patient Care Enhancement Award, sponsored by TEVA Novopharm**

Janes Lacey, Barb Evans, Jane Richardson  
Saskatoon Health Region, Saskatoon, SK

**Background:** Hospital discharge is a crucial time for medication reconciliation because patients are most susceptible to medication errors during transitions of care. The current discharge process from Royal University Hospital's Clinical Teaching Unit may provide inconsistent medication information to the patient, family practitioner and community pharmacist. The purpose of this project was to evaluate the accuracy and consistency of patient medication information and the clinical significance of medication discrepancies at hospital discharge.

**Objectives:** (1) Determine the level of concordance between the best possible medication discharge plan (BPMDP), discharge prescription, and medication sections of the physician discharge summary and nursing discharge care plan; (2) Identify the number of medication discrepancies between the BPMDP, discharge prescription and medication sections of the physician discharge summary and nursing discharge care plan; (3) Categorize and classify the clinical significance of each medication discrepancy.

**Methods:** Admitted patients with a completed best possible medication history were followed until discharge. A BPMDP was created and compared to the standard discharge documents. Concordance between all discharge documents was recorded. Medication discrepancies between the BPMDP and the discharge documents were noted and reconciled. The clinical significance of discharge discrepancies was evaluated by a physician and pharmacist.

**Results:** Four percent of patients (1/25) had concordance between the BPMDP and all discharge documents. Fewer medications were documented on the discharge prescriptions, physician discharge summaries, and nursing discharge care plans compared to the BPMDPs ( $p < 0.05$ ). Undocumented intentional discrepancies occurred at rates of 4.4, 2.3, and 4.1 per patient, respectively. Medication omissions accounted for the majority of discrepancies on the discharge documents. Discrepancies were rated as clinically significant 23.6 - 45.8 % of the time.

**Conclusion:** Inconsistent and incomplete medication information is provided to patients and care providers at discharge. The actual clinical significance of discharge medication discrepancies warrants further evaluation.

**Key words:** medication reconciliation, hospital discharge

## Efficacy, Safety and Patient Satisfaction of Propofol for Procedural Sedation and Analgesia in the Emergency Department: A Prospective Study

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

Peter J. Zed<sup>1</sup>, Riyad B. Abu-Laban<sup>2</sup>, Winnie W.Y. Chan<sup>3</sup>, David W. Harrison<sup>4</sup>

<sup>1</sup>Capital Health & Dalhousie University, Halifax, NS

<sup>2</sup>Vancouver General Hospital & Faculty of Medicine, University of British Columbia, Vancouver, BC

<sup>3</sup>Vancouver General Hospital, Vancouver, BC

**Objective:** To evaluate the efficacy, safety and patient satisfaction with the use of propofol for procedural sedation and analgesia (PSA) in the Emergency Department (ED).

**Methods:** All patients receiving propofol for PSA in the ED over a 24-month period were prospectively evaluated. Propofol was administered using a standardized protocol which included an initial dose of 0.25-0.5 mg/kg followed by 10-20 mg/min until sedated. Efficacy was evaluated using procedural success rate, recovery time and physician satisfaction. Adverse respiratory effects were defined as apnea >30s or an oxygen saturation <90%. Hypotension was defined as systolic blood pressure <90 mmHg or >20% decrease from baseline. Patient and physician satisfaction were determined using 5-point Likert scales.

**Results:** 113 patients were included with a mean age of 50.2 ± 18.8 years, and 61.9% were male. The most common procedures were orthopedic manipulation (44.2%), cardioversion (37.2%) and abscess incision and drainage (13.3%). The mean total propofol dose required was 1.6 ± 0.9 mg/kg. Procedural success was achieved in 90.3% of cases and the mean (SD) patient recovery time was 7.6 ± 3.4 minutes. No patient (0%, 95%CI 0-3.2%) experienced apnea; however, one patient (0.9%, 95%CI 0.0-4.8%) experienced emesis, which resulted in an oxygen saturation <90%. Nine patients (8.0%, 95%CI 3.7-14.6%) experienced hypotension and 7 (6.2%, 95%CI 2.5-12.3%) experienced pain on injection. All patients were very satisfied (92.0%, 95% CI 85.1-96.3%) or satisfied (8.0%, 95%CI 3.7-14.6%) and 93.8% (95%CI 87.7-97.5%) reported no recollection of the procedure. Physicians were very satisfied or satisfied with the sedation/conditions achieved in 85.0% (95%CI 77.0-91.0%) and 6.2% (95% CI 2.5-12.3%) of procedures, respectively.

**Conclusions:** Using a standardized administration protocol in a setting such as we describe, propofol appears to be a safe and effective agent for performing PSA in the ED, and is associated with high patient and physician satisfaction.

**Key words:** procedural sedation and analgesia, propofol, emergency department

## Pharmacists Making House Calls: An Innovative Role or Overkill?

**Pharmacotherapy Best Practices Award, sponsored by Pfizer Canada**

Adil Virani<sup>1,2</sup>, Priti Flanagan<sup>1</sup>, Hendrik Roelants<sup>3</sup>, Warren Baker<sup>4</sup>

<sup>1</sup>Pharmacy Services, Fraser Health Authority, BC

<sup>2</sup>Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC

<sup>3</sup>Blue Thorn Research and Analysis Group, Victoria, BC

<sup>4</sup>Ministry of Public Safety and Solicitor General, Victoria, BC

**Rationale/Objective:** The Medication Management Program (MMP) was established in Fraser Health in 2005 in response to evidence suggesting that pharmacists providing post-hospital discharge care during home visits could result in lower subsequent health service resource utilization. The purpose of this evaluation was to determine the effectiveness of the MMP in its first year.

**Methods:** The utilization of health services (hospitalizations, physician office visits and dispensed medications) in the year prior to receiving the MMP home visit intervention was compared to that of the year after, among patients who were part of the MMP. A comparison group of those who did not receive the MMP intervention was also created to compare health service resource utilization. Cost data were collected to calculate the net cost of the program.

**Results:** In the first year of the MMP, 2005/2006, 481 patients received a pharmacist home visit and medication assessment. Of these, 402 (84%) remained alive for a year after receiving the MMP intervention and were included in the before and after analysis. The median health service resource utilization costs were \$5,557 lower per patient in the year subsequent to receiving the MMP intervention compared to the year prior. This resulted in a net cost reduction of \$4,642 per patient. When compared to those who did not receive an MMP intervention, median resource utilization costs were \$2,741 higher. Selection bias was likely present in the comparison group.

**Conclusion:** The MMP was an effective clinical program in 2005/2006 and reduced costs in patients when compared to their previous year. Ongoing evaluation is planned, including developing a method to minimize selection bias and establish a comparison group based on identical selection criteria as the intervention group.

**Key words:** medication management, pharmacist, home visit

## Improving Risk Management with the Development of a Best Evidence-Based, Provincial Chemotherapy Preparation and Stability Chart

**Safe Medication Practices Award, sponsored by Baxter Corporation**

Mário de Lemos<sup>1</sup>, Linda Hamata<sup>1</sup>, Robert Bingham<sup>2</sup>, James Conklin<sup>1</sup>, Barbara Hsia<sup>1</sup>, Shabnam Iqbal<sup>3</sup>, Dennis Jang<sup>1</sup>, Dianne Kaptcyk<sup>4</sup>, Laurel Kovacic<sup>3</sup>, Kimberly Kuik<sup>3</sup>, Tanya Leduc<sup>4</sup>, Tracey Murrell<sup>5</sup>, Lynne Nakashima<sup>1</sup>, Sanna Pellatt<sup>4</sup>, Heather Scarlett<sup>4</sup>, Stephanie Soon<sup>4</sup>, Susan Walisser<sup>4</sup>

Pharmacy, BC Cancer Agency, <sup>1</sup>Vancouver, <sup>2</sup>Surrey, <sup>3</sup>Kelowna, <sup>4</sup>Victoria, BC

<sup>5</sup>At the time of the project, Pharmacy, BC Cancer Agency, <sup>6</sup>Vancouver, <sup>6</sup>Surrey, BC

Partly supported by the Medbuy Endowment/Bursary Fund.

**Objective:** To develop and implement a fully referenced, provincial chemotherapy preparation and stability chart that contains the basic information for the storage, preparation and stability of parenteral antineoplastic drugs commonly used in British Columbia (BC).

**Design:** A policy and methodology was developed at the BC Cancer Agency. Drafts of the chart were reviewed by staff at the regional cancer centres. The final version of the chart was made available to all the regional and community centres through our website. Success was defined as > 80% adoption rate.

**Results:** A standard process on data interpretation was developed, based on the major official guidelines and empiric assumptions to address practice issues which cannot otherwise be resolved, including beyond-use date of vials and finished products, infusion volumes, protection from light, and latex content. The chart currently contains information of approximately 63 parenteral antineoplastics (164 products). It has been adopted by 88% (28/32) of cancer centres in BC.

**Conclusions:** We have developed a fully referenced chemotherapy preparation and stability chart ([www.bccancer.bc.ca/HPI/DrugDatabase/Appendices/default](http://www.bccancer.bc.ca/HPI/DrugDatabase/Appendices/default)) that has been adopted by 88% of the cancer centres in our province.

**Key words:** drug compounding, drug stability, drug storage, antineoplastic agents

## Standard Concentrations of High Alert Drug Infusions across Paediatric Acute Care

**Safe Medication Practices Award, sponsored by Hospira Healthcare Corporation**

Danica Irwin<sup>1</sup>, Régis Vaillancourt<sup>1</sup>, Dale Dalgleish<sup>2</sup>, Margot Thomas<sup>3</sup>, Sylvain Grenier<sup>1</sup>, Elaine Wong<sup>1</sup>, Megan Wright<sup>2</sup>, Margaret Sears<sup>1</sup>, Dermot Doherty<sup>2,3</sup>, Isabelle Gaboury<sup>4</sup>

<sup>1</sup>Pharmacy Department, <sup>2</sup>Emergency Department, <sup>3</sup>Pediatric Intensive Care Unit, <sup>4</sup>Research Institute (Adjunct Investigator), <sup>5</sup>Department of Anaesthesia, <sup>6</sup>Research Institute, Children's Hospital of Eastern Ontario, Ottawa, ON

**Purpose:** To reduce the risk of medication errors in paediatric patients, the Canadian Council on Health Services Accreditation endorses the standardization and limiting of drug concentrations available within an organization.

**Methods:** Standard Concentrations (SCs) were implemented in the Emergency Department, Operating Room and Paediatric Intensive Care Unit (PICU) at The Children's Hospital of Eastern Ontario, Canada. Practice change involved addressing concerns raised during stakeholder consultations, developing a computer program, and educating and testing staff in the new method. The software for SC selection and infusion rate calculation features redundant inputs, a "deviation" column comparing the prescribed and infused doses, and a print-out of patient information that also facilitates dose verification back-calculation.

**Results:** The major barrier to acceptance of SCs was possible fluid overload in small patients. Thus infusions received by 48 successive infants in the PICU were compared to theoretical SC infusions. Volumes were not significantly increased, and there was no trend towards proportionally larger volumes in smaller patients. Medication error reporting was very low before implementation, and SC errors remained low while new online reporting led to higher reporting of other errors after implementation. A survey indicated excellent staff acceptance, and beliefs that patient safety and continuity of care were improved.

**Conclusion:** SCs were successfully instituted with computer support in lieu of "smart pumps" across multiple critical care units in a paediatric institution. The initial program is being expanded to 40 continuous infusion drugs, plus Paediatric Advanced Life Support bolus medications.

**Key words:** medication safety, pediatrics, high-alert infusions, standard concentrations, critical care



## Pharmacokinetics of Vancomycin and Gentamicin in Pediatric Patients on Extracorporeal Life Support

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

Jennifer Tam<sup>1,2</sup>, Mary H.H. Ensom<sup>1,2</sup>, Niranjan Kissoon<sup>1,3</sup>, Avash Jeet Singh<sup>1,3</sup>, Arthur Cogswell<sup>1,3</sup>, Roxane Carr<sup>1,2</sup>

<sup>1</sup>Children's and Women's Health Centre of British Columbia, Vancouver, BC

<sup>2</sup>Faculty of Pharmaceutical Sciences, The University of British Columbia, Vancouver, BC

<sup>3</sup>Faculty of Medicine, The University of British Columbia, Vancouver, BC

**Rationale/Objectives:** Extracorporeal life support (ECLS), a form cardiopulmonary bypass, may alter drug disposition. Vancomycin and gentamicin are commonly used for prophylaxis and treatment of sepsis in these patients. There is little information describing the impact of ECLS on pharmacokinetics or empiric dosing of these drugs. The objectives of this study were to characterize pharmacokinetics of vancomycin and gentamicin in pediatric patients on ECLS, compare intrapatient pharmacokinetics on and off ECLS, and create empiric dosing recommendations.

**Methods:** Retrospective review of pediatric patients on ECLS receiving either vancomycin or gentamicin. A one-compartment model was used for both drugs and pharmacokinetic parameters were calculated using the Sawchuk-Zaske method.

**Results:** Median (range) vancomycin pharmacokinetic parameters (N=36) were: volume of distribution ( $V_D$ ) 0.59 L/kg (0.22-1.64); drug clearance ( $Cl_{Dmg}$ ) 0.06 L/h/kg (0.01-0.13); elimination half life ( $t_{1/2}$ ) 8.9 h (1.4-47.5). Initial dosing recommendations were: 15 mg/kg IV q18h (neonates), 15 mg/kg IV q12h (infants), 10 mg/kg q12h (children), and 10 mg/kg q8h (adolescents). Median gentamicin parameters (N=49) were:  $V_D$  0.62 L/kg (0.20-9.35);  $Cl_{Dmg}$  0.06 L/h/kg (0.02-0.34);  $t_{1/2}$  8.1 h (2.2-62.0). Initial dosing recommendations were: 5 mg/kg IV q24h (neonates), 5 mg/kg IV q24h (infants), and 4 mg/kg IV q24h (children). Differences in parameters on versus off ECLS (vancomycin N=12; gentamicin N=14) were not statistically significant; however, this may be due to small sample size.

**Conclusions:** Wide interpatient pharmacokinetic variability was observed. Longer dosing intervals and larger initial doses of vancomycin and gentamicin are required to achieve target serum peak and trough concentrations. Further studies are needed to characterize drug disposition in ECLS.

**Key words:** extracorporeal life support, extracorporeal membrane oxygenation, pediatric, pharmacokinetics, vancomycin, gentamicin

## Verification of Imatinib Cost-Effectiveness in Advanced Gastrointestinal Stromal Tumor in British Columbia

*Specialties in Pharmacy Practice Award, sponsored by Hospira Healthcare Corporation*

Vincent H. Mabasa<sup>1</sup>, Suzanne C.M. Taylor<sup>2</sup>, Christina C. Y. Chuz<sup>2</sup>, Veronika Moravan<sup>2</sup>, Karissa Johnston<sup>3,5</sup>, Stuart Peacock<sup>4,5</sup>, Meg Knowling<sup>6</sup>

<sup>1</sup>Faculty of Pharmaceutical Sciences, University of British Columbia, Vancouver, BC (at time of study)

<sup>2</sup>Provincial Pharmacy, Systemic Therapy Program, British Columbia Cancer Agency, British Columbia (at time of study)

<sup>3</sup>Population and Preventative Oncology, British Columbia Cancer Agency, British Columbia

<sup>4</sup>Department of Health Care and Epidemiology, UBC; funded by Michael Smith Foundation for Health Research & CIHR

<sup>5</sup>British Columbia Cancer Agency, British Columbia

<sup>6</sup>Medical Oncology, Systemic Therapy Program, British Columbia Cancer Agency, British Columbia

**Background:** This cost-effectiveness analysis of imatinib in British Columbia Cancer Agency (BCCA) patients with advanced gastrointestinal stromal tumors (GIST) was performed to justify funding.

**Methods:** A pragmatic, retrospective review identified BCCA patients with advanced GIST who received imatinib or historical treatment during successive, pre-specified time periods. Primary outcome was the cost-effectiveness (CE) of imatinib based on median overall survival (MOS). Secondary outcomes were cost-effectiveness based on median progression-free survival (PFS) and comparison to literature efficacy. This study took the BCCA perspective. Sensitivity analyses varying effectiveness over the 95% confidence interval (CI), cost to its extremes, discounting level at 0, 3 and 5%, and substituting life expectancy for MOS were performed.

**Results:** Forty-six and 47 patients in the imatinib and historical groups respectively showed MOS with imatinib to be 66.7 months (95%CI 61.7, infinity) compared to 7.7 (95%CI 6.0, 12.6) in the historical group. Median-PFS were 45.3 months (95%CI 24.4, infinity) and 5.6 (95%CI 3.5, 8.5) respectively. Imatinib effectiveness was similar to literature reports. The annual incremental CE ratio for imatinib was \$15,882 per median life year gained and \$23,603 per median year of PFS.

**Conclusions:** Imatinib for advanced GIST seems cost-effective in BC. Results were robust across the range of sensitivity analyses performed.

**Key words:** advanced gastrointestinal stromal tumors, cost-effectiveness, health outcomes, imatinib, leiomyosarcomas, population-based research

## Développement d'un livre pour l'enseignement de la législation en pharmacie

*Teaching, Learning, and Education Award, sponsored by Wyeth Pharmaceuticals*

Jean-François Bussières

CHU Sainte-Justine, Montréal, QC

**Objectif :** L'objectif de ce manuscrit est présenter succinctement la démarche pédagogique ayant mené à la publication de cet ouvrage.

**Méthode :** Le projet de développement d'un livre pour l'enseignement de la législation en pharmacie a été réalisé selon la méthode suivante : élaboration d'une proposition préliminaire, entente de mise en œuvre, élaboration d'objectifs d'apprentissage, élaboration d'une structure de savoirs en tenant compte de principes, recherche documentaire, archivage, feuille de style de rédaction, rédaction, révision, publication et diffusion.

**Résultats et discussion :** Quatre éditions de l'ouvrage ont été publiées en 2005 (698 pages), 2006 (716 pages), 2007 (812 pages) et 2008 (840 pages). L'ouvrage comporte quinze chapitres soit deux chapitres abordant les systèmes (chapitre 1 - politique/judiciaires, chapitre 2- santé), les services assurés (chapitre 3), les lois fédérales (chapitre 4 et 5), les lois provinciales (chapitre 6 à 15). La rédaction initiale a nécessité un peu plus de 800 heures de travail professionnel (soir-nuit); les trois mises à jour ont nécessité respectivement 135 heures, 105 heures et 100 heures à chaque année, excluant le temps de révision de collaborateurs externes. Au total, les différentes éditions ont été diffusées à plus de 1000 étudiants depuis le début du projet. Plus qu'un projet, la démarche présentée a été réalisée comme prévu, à l'intérieur des échéanciers prévus et a contribué à l'enseignement. Plus encore, en dépit de l'importance du contenu, les étudiants ont relevé le défi et reconnu la pertinence de cette matière, bien que la pharmacothérapie ait un attrait plus grand que le volet socioadministratif. La reconnaissance de mon enseignement et des outils pédagogiques mis à leur disposition est une preuve de cette réussite.

**Conclusion :** Ce manuscrit présente succinctement la démarche pédagogique ayant mené à la publication d'un ouvrage sur la législation et les systèmes de soins en pharmacie.

**Mots clés :** législation, systèmes de soins, pharmacie