2008 CSHP National Awards Program Winners

Clinical Pharmacy Program Award, *sponsored by* ***Bristol-Myers Squibb Canada***

Jin-Hyeun Huh, Monique Pitre, Ada Seto
Development of an Electronic Pharmacy Patient Profiling System in the Era of Computerized Physician Order Entry

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

Nicole R. Hartnell, Neil J. MacKinnon, David U
Development of Canadian Safety Indicators for Medication Use

Long-Term Health Care Award, *sponsored by* ***Pfizer Canada Inc***

Susan Bowles, Ingrid Sketris
Longitudinal Analysis of the Relationship Between Concomitant Anticholinergic Drug Use and Response to Donepezil in Mild-to-Moderate Alzheimer's Disease

Management Issues in Pharmaceutical Care Award, *sponsored by* ***Apotex Inc***

Vincent H. Mabasa, Douglas L. Malyuk, Terra L. Wilson
Documenting and Analyzing the Impact of Clinical Pharmacy Interventions: An Evaluation of Mortality and Length of Stay

New Programs in Patient Counselling Award, *sponsored by* ***TEVA Novopharm***

Mário L. de Lemos, Dennis Jang, Leela John, Robin K. O'Brien, Suzanne C. Malfair Taylor
Impact on Patient Satisfaction with a Structured Counseling Approach on Natural Health Products

Oncology Award, *sponsored by* ***Hospira Healthcare Corporation***

L. Lee Dupuis, Alicia Koo
Efficacy and Safety of Caspofungin for the Empiric Management of Fever in Neutropenic Children

Rational Drug Use Award, *sponsored by* ***Merck Frosst Canada Ltd***

Michelle Foisy, Christine Hughes
Perinatal Human Immunodeficiency Virus (HIV) Care—The Role of the Pharmacist

Specialties in Pharmacy Practice Award, *sponsored by* ***Hoffmann-La Roche Limited***

Stephen Shalansky
The Risk of Warfarin-Related Bleeds and Supratherapeutic INR Associated with the Use of Complementary and Alternative Medicines: A Longitudinal Analysis

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The winner of the ***Distinguished Service Award*** (sponsored by Ortho Biotech Division of Janssen-Ortho Inc) is **Nancy L. Roberts.**

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

The winners of the ***New Hospital Pharmacy Practitioner Award*** (sponsored by Sandoz Canada Inc) are **Adrienne J. Lindblad** and **Yvonne Kwan.**

The winner of the ***Hospital Pharmacy Student Award*** (sponsored by the Canadian Society of Hospital Pharmacists) is **Omolayo Famuyide.**

2008 CSHP NATIONAL AWARD-WINNING ABSTRACTS

Development of an Electronic Pharmacy Patient Profiling System in the Era of Computerized Physician Order Entry

Clinical Pharmacy Program Award, sponsored by Bristol-Myers Squibb Canada

Ada Seto, Jin-Hyeun Huh, Monique Pitre
University Health Network, Toronto, Canada

Purpose: Inconsistent practice, frequent loss of information, limited accessibility, and inability to easily analyze data are limitations of paper-based communication. With the implementation of Computerized Physician Order Entry, development of a computer-based pharmacy documentation system was needed to improve communication.

Methods: Pharmacy Clinical Intervention Report and Track (*P-CIRT*) was developed in July 2005 and updated in March 2007. New functionalities include: 1) synchronizing patient visit information minimizing manual input, 2) interface between *P-CIRT* and electronic patient records integrating labs and medications onto one screen, 3) linking specific patient issues with relevant lab data to enhance pharmaceutical care, and 4) selection of patient issues from a standardized database of medical terms reducing free-text input.

Results: Between July 2005 and September 2006, 7518 patients, 21,003 issues, and 4359 therapeutic interventions were documented on *P-CIRT*. Communication was improved as evident by 36% issues accessed by more than one pharmacist. Clinical and workload data were easily retrieved using queries.

Conclusions: *P-CIRT* has overcome barriers to effective communication, standardized documentation, provided confidential accessibility to patient profiles, and facilitated workload statistics analysis. Next steps include implementation at two other sites of our institution and evaluation of the feasibility to answer research questions with *P-CIRT*.

Key words: electronic documentation, pharmaceutical care

Development of Canadian Safety Indicators for Medication Use

Innovation in Safe Medication Practices Award, sponsored by Baxter Corporation

Neil J. MacKinnon,[1] Rita Nigam,[1] David U,[2] Nicole R. Hartnell,[1] Adrian R. Levy,[3] Mary Ellen Gurnham,[4] Tiffany T. Nguyen[1]
[1]Dalhousie University College of Pharmacy, Halifax, NS, [2]Institute for Safe Medication Practices Canada, Toronto, ON, [3]Department of Health Care and Epidemiology, University of British Columbia, Vancouver, BC, [4]Capital District Health Authority, Victoria General Site, Halifax, NS

Background/Objective: Reports of preventable illness due to medication errors are widespread in Canada. However, quantifying the magnitude of the problem has been hampered by a lack of measurement tools. The objective of this study was to develop a set of Canadian consensus-based indicators for the safe use of medication for both the inpatient and outpatient setting.

Methods: The Delphi technique was used. The survey listing potential indicators identified through a literature search was created and pilot tested. Using the Delphi technique, the refined survey was administered to 20 national experts in medication-use safety to achieve consensus on indicators.

Results: After 3 rounds, consensus was obtained on 20 medication-use safety indicators: 7 indicators were related to systems of care, 5 to prescribing–ordering, 3 to monitoring and assessment, 3 to medication administration, 1 to preparation and dispensing and 1 to purchasing–inventory management. Seventeen of the indicators measure a process of care; at least 10 have application outside the inpatient setting.

Conclusions: The resulting 20 medication-use safety indicators are diverse in scope and should be applicable in a variety of practice settings. These indicators may provide clinicians and decision-makers with valuable tools to assess the safety of the medication-use system.

Key words: medication safety, medication errors, performance measures, safety indicators, medication-use system

Longitudinal Analysis of the Relationship Between Concomitant Anticholinergic Drug Use and Response to Donepezil in Mild-to-Moderate Alzheimer's Disease

Long-Term Health Care Award, sponsored by Pfizer Canada Inc

Susan Bowles[1-4], Swarna Weerasinghe[3], Kenneth Rockwood[1], Ingrid Sketris[1-3]
[1]Division of Geriatric Medicine, Department of Medicine, [2]College of Pharmacy, [3]Department of Community Health and Epidemiology, Dalhousie University, [4]Department of Pharmacy, Capital District Health Authority, Halifax, NS

Purpose: Anticholinergic (ACH) drugs & cholinesterase inhibitors (ChEIs) are frequently used together. Using data from the 52-week ACADIE study, we: 1) describe patterns of concomitant ACH use 2) assess longitudinal associations of ACH burden; & 3) assess longitudinal associations between exposure type & donepezil response in mild-moderate Alzheimer's Disease (AD).

Methods: Concomitant ACH use was defined as regular ACH use 2 weeks before each visit, with the ACH Drug Scale used to quantify ACH burden. The primary outcome was ADAS-Cog change; Goal Attainment Scaling (GAS) was a secondary measure. Data were analyzed using descriptive statistics & longitudinal regression.

Results: Concomitant ACH use occurred in 31%. Three ACH exposure types were identified: none, continuous, & intermittent. ACH burden was low: <4 in 42-50%. No association between ACH burden & outcomes was identified for either ADAS-Cog & GAS. Similarly, no association was observed between exposure type & response using ADAS-Cog. However, a trend for association between intermittent exposure & response using GAS (OR 0.52, 95% CI 0.27-1.00) was seen.

Conclusion: Concomitant ACH use is not associated with attenuated response to donepezil over 1 year in mild-moderate AD. Further work is needed to explore the relationship between ACHs & ChEI response over a longer time period.

Key words: Alzheimer's Disease, Cholinesterase Inhibitors, Anticholinergic

Documenting and Analyzing the Impact of Clinical Pharmacy Interventions: An Evaluation of Mortality and Length of Stay

Management Issues in Pharmaceutical Care Award, sponsored by Apotex Inc

Terra L. Wilson, Douglas L. Malyuk, Vincent H. Mabasa

Background: Documentation is essential in clinical pharmacy practice. At Royal Columbian Hospital interventions are documented in patient charts and recorded in electronic health records. A pilot project used this data to develop a method of correlating pharmaceutical care activities with patient outcomes.

Objective: Refine and verify a method of analyzing clinical pharmacy intervention data. Compare mortality and length of stay (LOS) for patients with and without documented pharmacy interventions.

Methods: Retrospective, randomized cohort study on inpatients with and without documented clinical pharmacy interventions. Controlled for complexity, compared mortality rates and mean LOS for intervention and control groups.

Results: Primary outcome analysis included 1,964 patients, mortality rates differed by 1.7% ($p>0.05$) (11.7% for intervention group versus 13.0% for control). In the LOS analysis including 8,709 patients, the average LOS was longer for the intervention group at 11.4 days versus 9.7 for the control group ($p<0.05$).

Conclusions: Documenting clinical pharmacy activities in an electronic database has many benefits and the information can be used to assess impact on patient outcomes. The study was not powered to show a significant mortality reduction and there was an unexplained increase in LOS, yet the process was effective and has many potential applications.

Keywords: clinical pharmacy, documentation, patient outcomes, interventions, mortality, length of stay

2008 CSHP NATIONAL AWARD-WINNING ABSTRACTS

Impact on Patient Satisfaction with a Structured Counselling Approach on Natural Health Products

New Programs in Patient Counselling Award, sponsored by TEVA Novopharm

Suzanne C. Malfair Taylor,[2] Mário L. de Lemos,[1] Dennis Jang,[1] Juliana Man,[1] Dawn Annable,[1] Saira Mithani,[2] Leela John,[2] Thanh Vu,[2] Robin K O'Brien[2]
[1]Pharmacy, BC Cancer Agency; [2]At the time of the study, BC Cancer Agency; Vancouver, BC

Partly supported by the Canadian Association of Oncology Pharmacy 2002 Research Grant.

Purpose: Natural health products (NHP) are commonly used by cancer patients. We report the impact on patient satisfaction by routine counselling on NHP using a structured approach we previously developed.

Methods: This was a prospective, controlled, open study conducted at the Vancouver Centre of the BC Cancer Agency. First-time patients visiting the pharmacy before (control) and after (intervention) introducing routine counselling on NHP were assessed for patient satisfaction (primary endpoint). Overall cost and cost per improvement in satisfaction were estimated.

Results: 265 patients completed the questionnaires. The average age was about 60 years old, with roughly equal number of men and women. Breast and genitourinary cancers made up about 80% of the patients. Nearly 45% of patients had some college or university education. The scores for overall satisfaction and each subscale were all increased in the intervention group. This was statistically significant regarding information on NHP (3.16 vs. 4.06, $p = 0.001$). Counselling on NHP was associated with additional 9 minutes of time and a mean additional cost of CDN$7.49 per patient.

Conclusion: We found increased patient satisfaction with routine counselling on NHP. There was only minimal increase in workload and cost for each counselling section.

Key words: dietary supplements, counselling, patient education, cancer, patient satisfaction

Efficacy and Safety of Caspofungin for the Empiric Management of Fever in Neutropenic Children

Oncology Award, sponsored by Hospira Healthcare Corporation

Alicia Koo[1] RPh, ACPR, BScPhm, HonBSc; Lillian Sung[2,3,5,7] MD, PhD; Upton Allen[2,4,7] MBBS, FAAP, FRCPC; Ahmed Naqvi[2,3,7] MRCP (UK); Jennifer Drynan-Arsenault1 RPh, ACPR, BScPhm; Allison Dekker[1] RPh, BSP; Anne Marie Maloney[2,3] RN, MSN, ACNP; L. Lee Dupuis[1-3,5,6] RPh, ACPR, MScPhm, FCSHP

[1]Department of Pharmacy and [2]Paediatrics, [3]Division of Haematology/Oncology, [4]Division of Infectious Diseases, The Hospital for Sick Children, Toronto, Canada; [5]Child Health Evaluation Program, Research Institute, The Hospital for Sick Children, Toronto, Canada; [6]Leslie Dan Faculty of Pharmacy, 7Faculty of Medicine, University of Toronto, Toronto, Canada

Background: Caspofungin was added to the SickKids' formulary as an alternative to amphotericin B for the empiric management of febrile neutropenia in patients 2 years or older who remain febrile despite treatment with broad spectrum antibiotics for 5 to 7 days.

Objective: The primary objective was to describe the efficacy of caspofungin when used for the empiric management of febrile neutropenia and to evaluate the adverse effects attributable to caspofungin. In addition, any possible drug interaction with cyclosporine in these children was assessed.

Methods: A retrospective chart review was completed for patients who received cancer chemotherapy or who underwent HSCT and received caspofungin for the empiric management of febrile neutropenia.

Results: Sixty-seven courses of caspofungin were administered to 56 patients aged 1 to 17 years. Fifty-three courses resulted in an overall favourable response; 10 children experienced an adverse drug-related event that was probably or possibly related to caspofungin and 1 of 19 children developed hepatotoxicity possibly related to caspofungin while receiving concomitant cyclosporine.

Conclusions: Caspofungin is effective for the management of febrile neutropenia in children receiving cancer chemotherapy. It is also associated with minimal adverse effects and is safe to use concomitantly with cyclosporine.

Key words: caspofungin, febrile neutropenia, children, cancer

Perinatal Human Immunodeficiency Virus (HIV) Care—The Role of the Pharmacist

Rational Drug Use Award, sponsored by Merck Frosst Canada Ltd

Michelle Foisy[1], Christine Hughes[1,2]
[1]Northern Alberta Program & Regional Pharmacy Services, Capital Health, Edmonton, Alberta; [2]Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta, Edmonton, Alberta

Purpose: Effective therapy has yielded dramatic decreases in vertical HIV transmission from about 25% to <-2%. Despite numerous patient obstacles, our program had a transmission rate of < 1% from 1999-2006.

Objective: To describe the role of the HIV pharmacists in helping to achieve these positive outcomes.

Methods: Four key areas where the pharmacist has made significant contributions were described.

Results: 1) The Perinatal HIV Protocol—creation of preprinted orders, a treatment algorithm, and patient education materials. 2) Antenatal care—consultants in the selection of appropriate antiretroviral therapy, medication adherence and the birthing plan. 3) Intrapartum care—provision of seamless care to inpatients at the time of delivery. 4) Post-natal care—follow-up of infants and mothers in the clinic.

Conclusions: Perinatal guidelines fail to address the role of the pharmacist in HIV perinatal care. Canadian pharmacists have the opportunity to provide leadership and further describe the significant role of pharmacists in this specialty.

Key words: HIV, perinatal transmission, pharmaceutical care

The Risk of Warfarin-Related Bleeds and Supratherapeutic INR Associated with the Use of Complementary and Alternative Medicines: A Longitudinal Analysis

Specialties in Pharmacy Practice Award, sponsored by Hoffmann-La Roche Limited

Stephen Shalansky, Pharm.D., FCSHP[1,2]; Larry Lynd, BSc(Pharm), PhD[2,3]; Kathryn Richardson, M.Sc.[3]; Andrew Ignaszewski, MD, FRCPC[4]; Charles Kerr, MD, FRCPC[4]
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Funding: This study was supported by a grant from the St. Paul's Hospital Foundation

Objective: To determine the risk of bleeding and supratherapeutic INRs associated with complementary and alternative medicine (CAM) use in a cohort of warfarin patients.

Methods: Patients completed a 16-week diary recording bleeding events and exposure to factors previously reported to increase the risk of bleeding and supratherapeutic INRs, including CAM consumption. Prescription and medical records were reviewed, and INR results were obtained directly from laboratories. Risk factors for bleeds and supratherapeutic INR (at least 0.5 above the target range) were evaluated longitudinally using generalized estimating equation (GEE) modeling.

Results: Of the 171 patients completing a diary, 87 (51%) reported at least one bleeding event and 36 (21%) had a supratherapeutic INR. Warfarin use of <3 months duration was the only statistically significant risk factor identified for supratherapeutic INR. Two CAMs were independently associated with an increased risk of self-reported bleeding: coenzyme Q10 (OR 3.69, 95% CI 1.88–7.24) and ginger (OR 3.20, 95% CI 2.42–4.24). Other factors significantly associated with increased bleeding risk included high target INR (2.5 to 3.5), diarrhea, acetaminophen use, increased alcohol consumption, and increased age.

Conclusions: The use of CAM by patients receiving warfarin is common, and consumption of coenzyme Q10 or ginger appears to increase the risk of bleeding.

Key words: complementary and alternative medicine, warfarin, bleeds, elevated INR, adverse events, drug interactions