CSHP Annual General Meeting 2008: Poster Abstracts / Assemblée générale annuelle 2008 de la SCPH : Résumés des affiches

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Monday, August 11, 2008 • Lundi 11 août 2008

Viewing/Affichage : 1010–1040
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1. Venous Thromboembolism Prophylaxis in the Regina Qu'Appelle Health Region: A Story of Quality Improvement Told by Successive Audits
2. Improved Orientation to Centralized Order Assessment for Hospital Pharmacists
3. Validation of an Adverse Drug Event Trigger Assessment Tool
4. Identified Barriers to Community Pharmacists' Participation in Practice Research
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6. North American Survey of Vasopressors and Inotropes in Sepsis and Septic Shock
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10. Development and Use of a Prior Learning Assessment Survey about Practice Evaluation and Research Capacity in a Regional Pharmacy Program

Poster abstracts are published exactly as submitted by the authors and have not undergone any copy-editing by the Canadian Journal of Hospital Pharmacy.

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

Descriptif d'un programme de stages hospitaliers de 3, 6 et 12 mois pour les étudiants en pharmacie français au CHU Sainte-Justine

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Justification : L'objectif de cet article est de présenter le bilan de stages offerts à des étudiants étrangers et de proposer un programme structuré de stage en pharmacie.

Matériel et méthode

Description du projet : Il s'agit d'une étude descriptive d'un programme de stages hospitaliers de 3, 6 et 12 mois pour les étudiants en pharmacie français au CHU Sainte-Justine, élaboré à partir des programmes académiques québécois et français et du bilan des 10 dernières années d'encadrement de stagiaires étrangers.

Évaluation : La recherche documentaire permet de dresser un bilan comparatif du type de diplôme et des stages cliniques des formations de base et complémentaire des étudiants en pharmacie aux États-Unis, au Québec et en France. L'étude présente un descriptif comparatif des stages cliniques offerts au CHU Sainte-Justine aux étudiants de 1er et 2e cycles de l'Université de Montréal, aux étudiants étrangers ainsi que leur participation à des activités créatrices de recherche appliquée. Cent quarante trois projets réalisés avec la contribution significative d'étudiants en pharmacie ont donné lieu à la présentation de 54 résumés structurés avec communications affichées dans un congrès et de 89 publications dans des revues scientifiques. De 1996 à 2007, les étudiants étrangers ont contribué à 35 % des activités créatrices bien que leur présence ne représente que 23 % des jours-présence étudiants.

Conclusion : Cette étude montre que, malgré les différences de formation et de reconnaissance des diplômes ente pays, la réalisation de stages en pharmacie dans les établissements de santé québécois est réaliste et que la diffusion d'un programme structuré peut contribuer à répondre aux attentes des personnes impliquées.

A Retrospective Review Describing the Empiric Management of Patients with Hospital Acquired Pneumonia

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Background: Hospital-acquired pneumonia (HAP) causes significant morbidity and mortality. The initiation of appropriate empiric antibiotic therapy in the treatment of HAP has been shown to reduce mortality, recurrence of HAP, and duration of antibiotics. The use of clinical guidelines or recommendations increases the likelihood of selecting appropriate empiric therapy. Currently, it is not known if published recommendations are consistently being followed at Red Deer Regional Hospital Centre (RDRHC).

Objective: To determine if adult patients admitted to RDRHC who have developed HAP are treated appropriately as compared to empiric recommendations by the American Thoracic Society (ATS) and in Bugs and Drugs 2001 and 2006.

Methods: The charts of all adult patients discharged from RDRHC between April 1, 2005 and December 31, 2007 with a diagnosis of HAP were reviewed to determine initial therapy and patient outcomes.

Results: Fifty-nine patients identified were eligible for inclusion. Four (7%) patients developed ventilator-associated pneumonia and seven (12%) developed aspiration pneumonia. There was an overall in-hospital mortality of 32%. Twenty-one patients (36%) were treated appropriately when compared to recommended empiric therapy (Bugs and Drugs 2001 and 2006). Seven patients (12%) were treated according to empiric guidelines published by the ATS. Twelve patients had organisms identified in their blood or sputum samples, 6 of which received appropriate antimicrobial tailoring. Overall, the use of appropriate empiric therapy as compared to Bugs and Drugs 2006 showed reduced length of stay (39 versus 54 days) and duration of treatment (10 versus 14 days).

Conclusions: Empiric therapy for HAP at RDRHC follows published recommendations in 12 to 36% of patients treated. There is potential to shorten length of patient stay and reduce the duration of antimicrobial treatment if there is an improvement in adherence to recommended empiric therapy.

Effectiveness of an Allergy/Intolerance Status Form on Improving Documentation of Patient Allergy Information

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Rationale: Patients often confuse the words allergy and intolerance. In many instances documentation of provided information is incomplete or inaccurate. For these reasons, the Allergy/Intolerance Status Form (AISF) was created for our hospital. The purpose of this quality improvement project was to determine if implementation of the AISF has improved the frequency and accuracy of allergy documentation within the patient record and pharmacy information system, and to determine if revisions to the AISF were required.

Description of Project: Phase one of the project was a prospective and retrospective review of patient charts and patient profiles from the pharmacy information system. Demographic and allergy/intolerance information was extracted from the patient profiles and several chart documents where allergy information is documented. In phase two, nursing staff were surveyed to determine if revisions to the AISF were required.

Evaluation: The majority of AISFs examined (93%) were partially completed. The number of partially completed patient profiles (48% vs 34%), fully completed patient profiles (48% vs 27%), fully completed physician order sheets (9% vs 5%) and the number of partially completed medication administration records (49.5% vs 40%) increased following implementation of the AISF.

Conclusions: The AISF is a useful form for documenting patient allergy and intolerance information. Documentation of this information has improved since the AISF was implemented. Based on this quality improvement project, several recommendations related to the AISF form and the process for documenting allergies at the hospital were identified: 1) revise the format of the AISF to make it easier to fill out, 2) re-educate nursing staff with respect to allergy documentation processes, 3) re-evaluate hospital policy regarding the use of wrist bands to indicate patient allergies, and 4) re-evaluate the need for including allergy and intolerance information on physician order sheets.

Indispensable in Ghana: A Pharmacists Role in a Medical Mobile Clinic

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Rationale: As pharmacists become more aware of the needs of developing nations in our "global village," interest in contributing to humanitarian projects is growing. This poster describes how one pharmacist worked with a volunteer healthcare team to provide mobile medical clinics for 5 rural villages in Northern Ghana.

Description of Project: Preparation began with research the conditions that would be encountered and with procedures for running a mobile medical clinic. A drug list was developed and drugs were procured from a variety of sources. A community vitamin drive provided sufficient vitamins for every person who came to the clinics. Antimalarials and antihelminthics were purchased in Ghana. A formulary was developed for both team use and to leave behind as a reference for local healthcare workers. It included an inventory of all items on hand with numerical codes for dispensing, as well as appropriate indications and dosing recommendations.

Evaluation: During the course of 9 days, our mobile medical clinic attended to more than 3000 patients. 300–500 prescriptions were dispensed each day in addition to vitamins and acetaminophen. The pharmacist reviewed all prescriptions, calculating pediatric doses and substituting as needed, then assigned the formulary code. Lay members prepared the handwritten label and dispensed. The pharmacist then checked the final product before a nurse provided patient teaching with local interpreters.

Conclusion: Our first experience provided many lessons to help us be more efficient and effective when we return next fall. We will prepackage vitamins and acetaminophen in advance, limit the number of formulary items and use preprinted labels with standard dosing wherever possible. We plan to computerize our dispensing and pack all medications according to their assigned code. With four pharmacists on the Ghana 2008 Health Team, we look forward to getting more involved in patient teaching and planning for future programs, in this remote area of Northern Ghana.

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

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Rationale: 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 16-bed adult tertiary level Intensive Care Unit (ICU) team would improve pharmacists' work efficiency.

Description of Project: Direct patient care pharmacy services are provided by two clinical pharmacy specialists. Pharmacy technicians hired into the clinical support role were experienced with the hospital medication distribution system. CPST training was supervised by both ICU pharmacists. Training activities included: job shadowing, supervised guided activities, and group discussions. Protocols and procedures were developed based on the expected competencies. Monthly meetings were arranged for continuing education, skills upgrading and quality assurance. CPST training included activities which would best support the ICU pharmacists. These activities included the following: patient specific data collection and monitoring form documentation, screening and tracking patients progress according to targeted parameters, medication reconciliation, assisted therapeutic drug monitoring services, medication distribution workflow, drug information / IV compatibility assessment, adverse drug reaction reporting, medication error tracking, staff development, research data collection, and traditional medication distribution support in the pharmacy dispensary

Evaluation: The CPST program improved efficiencies in the delivery of pharmaceutical care in the ICU by increasing availability of pharmacist time by an estimated minimum of 2 hours per day. The technicians also benefited from an increase in job satisfaction and knowledge of the medication use process from the patient care unit perspective.

Conclusion: CPST can increase the availability of pharmacists' time in a tertiary care ICU. Technicians in this role reported improved job satisfaction.

A Case Study on the Perceived Advantages and Disadvantages of Using Drug Samples in a University Hospital Center

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Rationale: The distribution of drug samples is both permitted and a common practice in Canada and the US. The impact of this strategy on healthcare workers' opinions and habits is a reason for concern.

Objectives: To evaluate the perceived advantages and disadvantages of using drug samples in a university hospital center.

Method: This is an observational descriptive case study that was conducted in a 500-bed university hospital center between October 18th and November 1st 2007. In order to obtain feedback from the healthcare staff, our research team, which was made up of a physician, pharmacy resident, two pharmacists and a student in health administration, designed a 26-question survey using a Likert scale (fully agree, partially agree, partially disagree, totally disagree, do not know). The questions focused on eight different variables (rapid treatment initiation, free cost and availability, patient risk, etc.).

Results: In total, 39 physicians, 18 medical interns, 17 medical clerks, 83 nurses and 23 pharmacists working in various healthcare units and outpatient clinics agreed to take part in the survey and fill out the questionnaire (n = 180). Generally speaking, there was a high degree of variation among the professional groups in their levels of agreement with the statements on the questionnaire. For example, 71% of the nurses, 43% of the physicians, 71% of the medical residents and 36% of the medical clerks believed that drug samples encouraged treatment compliance, whereas only 17% of the pharmacists were of this opinion.

Conclusions: There are few data on the views held by various healthcare professionals concerning the use of drug samples in healthcare institutions. This case study describes the levels of agreement expressed by five groups of healthcare professionals in a university hospital center. Our results show that the perceived advantages and risks of drug samples vary according to the healthcare providers and whether or not they are exposed to their use and that information must be given to the concerned professionals and that strict measures must be instituted to ensure patients' security.

Design, Development, and Evaluation of Culture-Sensitive Pictographic Instructions for Dispensing Medications

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Rationale: Low health literacy and/or language barriers between patients and health care providers exist, creating the need for the design, development and evaluation of culture-sensitive pictographic instructions to assist medication counselling.

Description of Project: In collaboration with the International Pharmaceutical Federation (FIP) pharmacy students, culture-sensitive pictograms were submitted to focus groups from various geographical regions to identify the comprehension of pictograms to dispense drugs. International partners collaborated in the design and development of culturally sensitive pictograms, and they were then approved for usage in those specific cultures and/or suggestions were made for new pictograms. In 2005, Pharmacists without Borders, Canadian Forces, and FIP field-tested the practicality of these pictograms in Gabon, Pakistan, Indonesia and Benin. In July 2007, an online survey (English and Spanish) was posted on the FIP website to validate all culture-sensitive pictograms. The online program, accessible through FIP's website includes an inventory of all pictograms for different cultures.

Evaluation: Based on feedback, additional pictograms were designed to address culture-sensitive differences: In total, 14 new pictograms were created and approved for cultures specific to Finland, United Kingdom, Egypt, Singapore, Hungary, Australia, Indonesia, Serbia and Taiwan. Further collaboration is ongoing with other international and national agencies including Health Canada, the Mexican Pharmacist Group, and Pharmacists Without Borders to further develop pictograms specific to individual cultures including the First Nations, Mexico and Mali. The online survey has identified appropriate modifications to medication pictographic instructions to reduce interpretation errors based on continent of cultural origin and have allowed incorporating the culture-specific pictograms into the storyboard concept.

Conclusion: Developing culture-specific pictograms, along with written and verbal counselling, has generated positive feedback from all communities and there is recognized value in having such a program implemented into their framework for the comprehension of drug information.

A Retrospective Review of Morphine Administration and Monitoring and the Prevalence of Adverse Events in a Paediatric Setting

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Rationale: Morphine monitoring guidelines are outdated (1992) and do not reflect current standards of practice, and therefore may be resulting in sub-optimal pain management.

Description of Project: To detect the prevalence of morphine adverse drug reactions (ADRs) associated with intravenous (IV) bolus administration by an evidence-based monitoring protocol coinciding with the peak drug effect for IV bolus morphine. Retrospective chart reviews of 270 patient records to assess vital sign monitoring at baseline, 10 and 20 minutes post administration for initial morphine dose and at 15 minutes for subsequent doses.

Evaluation: Complete documentation of vital signs (heart rate, respiratory rate, blood pressure, oxygen saturation, sedation, pain score) was evident in 48% of records at baseline (n = 130), 44% at 10 minutes (n = 119), and 37% at 20 minutes (n = 99). Low oxygen saturation scores (below 94%) were seen in 5 patients at baseline, 5 patients at 10 min, and 7 patients at 20 minutes post morphine administration. There were 784 subsequent doses overall and of those, 433 (55%) had complete documentation (heart rate, respiratory rate, and oxygen saturation). For the subsequent doses, heart rate was low for 13 doses (n = 5 patients); respiratory rate was low for 6 doses (n = 5 patients), O_2 sat was low for 33 doses (n = 18 patients, range 89%–94%). IV bolus morphine was an effective pain management modality as pain intensity decreased (average score of 5.9 at baseline, 3.8 at 10 minutes, 2.95 at 20 minutes).

Conclusion: Although documentation was somewhat low at some time periods, the monitoring protocol represents a significant practice change for the nursing staff, as prior to this study, there was no requirement for monitoring subsequent doses. Barriers to the documentation of effective monitoring are being assessed and strategies to improve are being developed.

GATC Project (Genotypic Approaches to Therapy in Children): A National ADR Surveillance Network to Study and Prevent Severe Adverse Drug Reactions in Children—Year 2

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Rationale: Adverse drug reactions (ADRs) are potentially life-threatening responses to medications. In the USA, ADRs rank as the 4–6th leading cause of death with >$137 billion annually in health care costs. Children are at an increased risk of severe ADRs. We hypothesize that genetic polymorphisms in drug metabolism genes underlie a significant portion of concentration-dependent ADRs in children.

Objective: To identify genetic variants that cause severe ADRs and develop diagnostic tests to prevent these ADRs.

Method: We established a national surveillance network of trained, full-time, clinicians in 8 of Canada's major children's hospitals, serving 75% of Canadian children to collect DNA samples and detailed clinical information from ADR cases and drug-matched controls. DNA samples were genotyped for 3072 SNPs in 250 key drug metabolizing enzymes with a custom Illumina GoldenGate® assay to identify genomic markers predictive of ADR risk.

Results: After 2 years, 996 severe ADR cases and >7000 drug-matched controls were recruited, including cases of severe anthracycline-induced cardiotoxicity, cisplatin-induced deafness, and life-threatening skin reactions. Preliminary genotype analyses have identified SNPs highly associated with 3 severe ADRs: codeine-induced infant mortality, cisplatin-induced deafness, and anthracycline-induced cardiotoxicity.

Conclusion: These findings aim to be developed into pragmatic ADR risk management strategies for clinicians based upon an individual's genotype.

Venous Thromboembolism Prophylaxis in the Regina Qu'Appelle Health Region: A Story of Quality Improvement Told by Successive Audits

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Rationale: Venous thromboembolism (VTE) includes deep vein thrombosis (DVT) and pulmonary embolism (PE) and is a major source of morbidity and mortality in hospitalized patients. Sixty to 80% of hospitalized patients will have risk factors for developing VTE with 10–20% of medical patients and up to 60–80% after spinal cord injury developing VTE during their hospitalization. Evidence-based guidelines for prevention of VTE have been published; however implementation of the recommendations has been low according to several published studies, especially in medical patients.

Methods: To document the uptake of these guidelines into clinical practice within the RQHR, a series of real-time patient chart audits were conducted by pharmacists for most inpatients on a given day in January 2005, August 2005 and January 2008. Between audits, multiple initiatives were undertaken to improve awareness and compliance with the guideline recommendations (e.g. use of pre-printed physician orders, professional in services, posters, newsletter article, etc.).

Results: The percent of all eligible patients receiving appropriate prophylaxis improved over the course of the 3 audits (63% Jan 2005, 72% Aug 2005, 86% Jan 2008). The percent of eligible *medical* patients (47% Jan 2005, 59% Aug 2005, 73% Jan 2008) and *surgical* patients (79% Jan 2005, 87% Aug 2005, 97% Jan 2008) receiving appropriate prophylaxis similarly improved.

Conclusion: The January 2008 RQHR VTE prophylaxis audit shows a high rate of overall compliance with the guidelines (86%) compared to other reports which have shown a compliance range of 13–60% of patients. The successful implementation of these evidence-based guidelines may have implications for planning other practice change initiatives in our health region.

Improved Orientation to Centralized Order Assessment for Hospital Pharmacists

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Rationale: A Pharmacist shortage led to multiple new hires, including those without previous hospital Pharmacy experience. As such an extensive orientation to assist the transition to the hospital Pharmacy environment was necessary.

Description of Project: Pharmacist orientation was divided into three categories: drug distribution, centralized order assessment, and decentralized clinical activities. Consensus identified that centralized order assessment orientation needed the most improvement. A series of self-study modules (SSMs) were developed to supplement the current colleague mentoring training. In addition to the modules, a series of cases were developed to assess the knowledge the orientating Pharmacist gained.

Evaluation: A Five-Point Likert Scale survey to assess the applicability and practicality of the SSMs was completed by 3 pharmacists who finished the re-designed orientation. All agreed that the SSMs supplemented the training by their mentor, and that they should become an essential component of orientation. Two out of the 3 Pharmacists agreed that the SSMs were a suitable way to learn, were easy to read, and contained an appropriate amount of information. Most importantly all Pharmacists felt they could better assess an order and provide a better quality of care to their patients after completing the SSMs. The cases were also deemed to be challenging and reflective of real life practice. All strongly agreed that the review of the cases with another Pharmacist was a useful exercise. Informal feedback was given to increase the number and types of modules.

Conclusion: The Pharmacists agreed that the implementation of SSMs and cases were successful in supplementing the existing orientation procedures. Having completed the SSMs, all of the Pharmacists agreed that they feel more confident when assessing orders. Based on these results the SSMs will continue to be used and further developed.

Validation of an Adverse Drug Event Trigger Assessment Tool

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Rationale/Objective: In an effort to estimate the prevalence of ADEs presenting to Adult emergency departments (ED) in Newfoundland and Labrador in a cost efficient manner, a trigger assessment tool (TAT) was developed to assist in categorizing patient charts into five groups, "high", "moderate", "low", "very low" or "no" potential of being ADE related. The goal of this evaluation was to assess the validity of the TAT.

Methods: The TAT was developed, used and validated for the purpose of carrying out a retrospective chart review on a sample of 1458 patients. The TAT contained 39 triggers known to be sensitive to the occurrence of ADEs. Using emergency room summaries, a physician and nurse combined the triggers they found with the patients medication history, and reason for presentation, to make a clinical judgment on the potential for the visit being ADE related. To validate the TAT, two ED physicians and two clinical pharmacists carried out an independent review of a random sample of charts from the combined group of "low/very low" potential and the "no" potential group to determine if they were ADE related. To be considered valid we would expect the prevalence in this sub-sample to be less than the entire sample.

Results: There were 170 charts selected from the low/very low potential group, of which 3 (1.8%) were found to have potential ADEs as the reason for the emergency room visit. There were a further 192 charts selected from the no potential group, none of which were proved ADEs. The prevalence of ADEs in the original sample of 1458 was 2.8%.

Conclusions: The TAT was an effective tool to categorize ED visits according to their potential to be ADE related. It also proved to be a practical method for reducing costs associated with determining the prevalence of ADEs.

Identified Barriers to Community Pharmacists' Participation in Practice Research

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Rationale/Objectives: Pharmacists recognize the importance of practice research, yet historically, few become involved. In the Pharmacist Intervention in Risk Reduction (PIRR) study (2001–2004), all Saskatchewan pharmacists were invited to participate. Of 1100 pharmacists, only 61 agreed to participate and of those, only 20 enrolled any patients over the two year study period. In Manitoba, the Cardiovascular Risk Intervention by Manitoba Pharmacists (CRIMP) program experienced a dramatic decline in both pharmacy involvement and patient recruitment in its second year of operation. The purpose of this study was to survey all pharmacists who expressed an initial interest to participate in either the PIRR study or CRIMP program, regardless of whether they actually did, in an attempt to identify the barriers to participation in practice research.

Methods: Online surveys were distributed to those pharmacists for whom current contact information was available (28 PIRR, 40 CRIMP). An email, introducing the survey and its purpose, was sent 5 days prior to the main mailing. Reminders were sent after 2 and 3 weeks and the survey was closed after 4 weeks. All survey questions were developed by PIRR and CRIMP investigators following a review of the literature.

Results: Forty-nine (72.1%) surveys were returned. Most respondents were full-time pharmacists (49.0%), working in independent stores (49.0%), filling 50–150 prescriptions daily (59.2%). The majority had not previously participated in practice research (60.4%). Motivation for participation included a potential benefit in individual practice development (89.6%) and benefit to patients (79.2%). Identified barriers to participation were lack of time and available staff. Monetary compensation, self-confidence, and program protocol/training were not viewed as barriers to participation.

Conclusion: Despite possessing the desire, motivation, and self-confidence to participate in practice research, the participation of PIRR/CRIMP pharmacists appeared to be limited by workplace environments, including lack of time and available staff.

Design and Implementation of a Standardized Regional Antidote Kit

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Background: Literature has shown that most hospitals in North America have inadequate stocking levels of antidotes required for both common and rare poisonings.

Objective: Our primary objective was to assure ongoing appropriate antidote stocking for hospitals within the David Thompson Health Region (DTHR) through development of a policy and procedure, as well as a standardized antidote "kit". Our secondary objective was to determine the number of appropriately stocked antidotes among hospitals within DTHR.

Methods: Antidote stocking guidelines specific to DTHR needs were developed through literature evaluation, consultation with the Alberta Poison and Drug Information Service (PADIS), and analysis of the unique needs of the region. A survey of stocking levels for 13 essential antidotes in both Emergency and Pharmacy departments within DTHR was performed, which were compared with a U.S. evidence-based & consensus antidote stocking guideline.

Results: Antidote "kits", incorporating stocking guidelines were developed, along with a policy and procedure for all sites within DTHR. Of the seventeen sites that were surveyed, the average number of appropriately stocked antidotes for hospitals was 5.9 (mode = 5) out of a possible 13, while emergency departments only stocked an average of 2.8 antidotes (mode = 3).

Conclusion: DTHR had inappropriate stocking of antidotes. To overcome this, a standardized regional antidote kit was produced and distributed among all sites, along with a policy and procedure for antidote stocking.

Encore Presentation

North American Survey of Vasopressors and Inotropes in Sepsis and Septic Shock

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Rationale/Objectives: Despite guidelines on vasopressors and inotropes in sepsis, there is little information on actual usage. The objective of this study was to characterize the selection criteria, dosage, monitoring, and adverse drug reactions (ADRs) of vasopressors and inotropes in sepsis and septic shock.

Methods: A 42-item survey about management of septic patients was developed, field-tested and sent to 1065 ICU pharmacist members of SCCM, ACCP, and CSHP.

Results: There were 217 responses (20.4%). Pharmacists reported 3.8±15.3 septic patients admitted per month. Only 13.6% of ICUs had a hemodynamic protocol. First line vasopressors were not influenced by the presence (norepinephrine 63.5%, dopamine 24.5%) or absence (norepinephrine 52.4%, dopamine 34.0%) of a PA catheter. Low dose vasopressin was most often started after adrenergic vasopressors failed (70.8%). When used, a constant infusion (51.7%) or titration up to (24.6%) 0.04 U/min was most common. There were 18 different starting (range: 0.01–5 mcg/kg/min and 0.1–12 mcg/min) and 23 maximum (range: 0.2–30 mcg/kg/min and 12–200 mcg/min) doses of norepinephrine. Mean arterial pressure (MAP) >60 was the most frequent (39.3%) endpoint to guide vasopressor therapy. Inotropes were reported as being used "rarely" (34.6%), "sometimes" (47.5%), and "often" (11.5%). The decision to use inotropes depended on cardiac output (68.7%) or SvO2 (36.9%), with inotropes of choice being dobutamine (59.7%), dopamine (>5 mcg/kg/min) (20.4%), or milrinone (7.4%). Endpoints of therapy were cardiac output (75.1%), MAP (66.8%), SvO2 (45.6%), and urine output (44.7%). There were 8 different starting (range 0.05–5 mcg/kg/min) and maximum (10–50 mcg/kg/min) doses of dobutamine. Perceived incidences of ADRs were 46.9% tachycardia and 17.5% other arrhythmias with vasopressors and inotropes.

Conclusion: There is much variability in the selection criteria, dosage, and monitoring of vasopressors and inotropes. The suspected rate of ADRs is high. Implementing published sepsis guidelines may minimize variability.

Encore Presentation

Implementation and Assessment of an Instructional Seminar for Online Case-Based Discussions

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Rationale/Objectives: Distance learning is increasingly available in higher education, resulting in growing needs to prepare faculty to teach online. Our purpose was to 1) conduct a training seminar to prepare pharmacy teaching assistants (TAs) and College faculty to teach in an online "classroom" and 2) assess the impact of this training on faculty's perceptions of teaching effectiveness.

Methods: The seminar was a two part series hosted on campus; it was open to all pharmacy teaching faculty. Part One included an introduction to technology (with classroom examples), a discussion of strategies and challenges, and teaching pearls from experienced distance education faculty. Part Two was an application-based workshop, with attendees planning and participating in a mock case discussion in the web-based classroom. A pre- and post-survey was developed to collect demographics, prior distance education experience, and perceptions/satisfaction before and after facilitating an online case discussion. Both were delivered via an Internet-based survey tool.

Results: Twenty (91%) instructors completed the preseminar survey instrument. Eleven of these instructors attended at least 1 session of the seminar and indicated that the didactic and/or application portions were either "helpful" or "very helpful". These faculty members and teaching assistants also completed the postseminar survey instrument and conveyed a significatnt increase in level of comfort in their ability to facilitate online case-based discussion ($p = 0.004$). The 3 most frequently percevied barriers to online teaching remained consistent despite training or teaching experience.

Conclusions: After attending a training seminar and/or facilitating an online case discussion, participants' comfort level in their ability to teach online increased. Further study of the impact of faculty development programs on teaching effectiveness and student satisfaction with online pharmacy education is warranted.

Encore Presentation

Suspected Modafinil-Induced Acute Psychosis in a Schizophrenic Patient Treated with Clozapine

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Rationale: Modafinil is classified as a stimulant to improve wakefulness in conditions such as narcolepsy. Off-label use has extended to treatment of fatigue associated with other disorders, including psychiatric illnesses. The acute worsening of psychotic symptoms in a schizophrenic patient is attributed to modafinil use in the following case report.

Description of Project: A 48-year-old male patient having chronic paranoid schizophrenia was treated with multiple antipsychotic agents prior to being initiated on clozapine. Clozapine dose was 275mg daily when modafinil 100mg twice daily was initiated due to drowsiness observed by caregivers. Concurrent medications included: citalopram 40mg daily, fludrocortisone 0.1mg twice daily, multivitamin daily and loperamide as needed.

Evaluation: In the 2 weeks preceding modafinil introduction, the patient was considered to be showing continued improvement with no clear evidence of psychosis. Abrupt changes in the patient's behaviours were observed 48 hours after modafinil started. Marked behavioural changes were accompanied by altered thought process as reflected in sexually inappropriate comments toward male caregivers, increased aggression, bizarre content in conversation and confusion. Modafinil was stopped after the patient received 8 doses. The patient's behaviour was then noted to gradually improve and return to baseline within 72 hours. A subsequent clozapine level of 1837 nmol/L exceeded the recommended minimum effective concentration of 1070 nmol/L. Other bloodwork was unremarkable. Using the Naranjo adverse drug reaction scale, a score of 3 is consistent with a possible adverse reaction to modafinil.

Conclusion: Health Canada stated in December 2007 that "caution should be exercised when modafinil is given to patients with a history of psychosis, depression or mania" due to the possibility of patients developing new or worsening psychiatric symptoms. This case report demonstrates the potential for modafinil to exacerbate an underlying psychotic illness despite clozapine treatment.

Methotrexate Use in Ectopic Pregnancy in the Emergency Department

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Objective: In order to determine the need for a standardized protocol for the use of methotrexate in ectopic pregnancy, a quality improvement initiative was undertaken to quantify the number of patients with ectopic pregnancy and the frequency of methotrexate use in those patients. Additional data was collected to determine current practice in the David Thompson Health Region in comparison with suggested recommendations by the Practice Committee of the American Society for Reproductive Medicine.

Methods: A retrospective chart analysis was performed based on medical records from April 1, 2006 to March 31, 2007. Descriptive statistics were used to quantify the frequency of use of methotrexate and rho(D) immune globulin, and the number of patients who received methotrexate and who later required surgery.

Results: Forty-one patients were admitted to the Red Deer Regional Hospital emergency department with a diagnosis of ectopic pregnancy. Thirteen (31.7%) patients received initial methotrexate treatment compared to 28 (68.3%) patients who received primary surgical intervention. Dosing of methotrexate was highly variable, with 6 patients who could be confirmed to receive a dose of 50 mg/m^2. Five of the 6 eligible patients received rho(D) immune globulin. Six of the 13 methotrexate-treated patients received surgery following methotrexate for various reasons. Follow-up varied depending on the patient and physician.

Conclusion: Use of a standardized protocol and patient information sheets may assist in providing consistent care.

Encore Presentation

Development and Use of a Prior Learning Assessment Survey about Practice Evaluation and Research Capacity in a Regional Pharmacy Program

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Rationale: The Winnipeg Regional Health Authority (WRHA) has developed a Practice Evaluation and Research Initiative, in order to build research and evaluation capacity. Prior learning assessment (PLA) promotes understanding of personal strengths and likes, establishes a professional development baseline, and identifies areas requiring further study.

Description of Concept: We created a 21-item survey about PLA, attitudes towards practice evaluation and research and continuing education topics. Pharmacy staff scored past exposure, perceived ability (prior experience) and interest in content areas related to the research process.

Evaluation: A total of 68 staff attended a presentation about the initiative, and an additional 93 staff were emailed the survey. 51 (32%) completed the survey, 98% were pharmacists. Overall, highest interest scores were related to software skills, generating research or practice evaluation ideas and developing proposals for new pharmacy services. Interest scores greatly exceeded ability scores for: developing and evaluating new pharmacy services, participating in drug and health care cost control programs, developing and writing a project proposal or protocol and presenting posters. The majority of respondents (60%) expressed that they lacked sufficient time to participate in practice evaluation and research projects; however, many felt that they had sufficient knowledge (46%), experience (36%) and mentorship (45%). Many (58%) felt that getting organized and starting a study was a barrier to participating in research. All proposed continuing education topics were of interest.

Conclusion: This data will be utilized to develop targeted CE programming, and linkage of staff with research mentors in order to increase research capacity.