AFPC CONFERENCE 2002 PROGRAM

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WELCOME TO THE AFPC CONFERENCE!

From **President Fred Rémillard:**

It is my pleasure to welcome everybody to another exciting AFPC Annual Conference. This is a great time of year; spring is here, undergraduate classes are over and tax returns are in (sorry about that)! Most importantly it is a chance to reacquaint ourselves with old friends, meet new colleagues and hopefully continue to learn at the conference and take away new information.

I want to congratulate Dr. Lavern Vercaigne and the entire Conference Planning Committee for putting together another inspiring Teacher's Conference and Research Symposium. This year's conference, entitled "Educational Excellence: An Endless Horizon for Learning", will continue to address relevant topics which will guide all of us in academia as we move forward with program revisions, evaluations and accreditation matters. We will also have the opportunity to enter into some discussion of issues affecting experiential learning.

I wish to express our thanks to the conference sponsors (see page) for their contributions to the success of our educational program.

Although the conference itself promises to be another success, do not forget to take the opportunity to enjoy Winnipeg's fine restaurants and exciting night life. I know I will !

Bienvenu à notre Conférence annuelle d'AFPC. Ces't toujour un plaisir d'avoir la chance de rencontrer nos vieux amis at aussi des nouveaux collègues. J'aimerais félicité D Lavern Vercaigne et sons comité pour preparer une autre conférence excitante.. La conférence va continuer d'addresser les sujets important pour nos programmes scolaire.. N'oublier pas à
se donner du bon temps à Winnipeg avec ces très bons restaurants et les boîtes de nuit.

Fred Rémillard, Pharm.D., BCPP
President, Association of Faculties of Pharmacy of Canada

From **Lavern Vercaigne, Chair, Conference Planning Committee**

On behalf of the entire planning committee. it is my pleasure to welcome you to Winnipeg for the AFPC Annual General Meeting. In keeping with our prairie theme, "Educational Excellence: An Endless Horizon for Learning", we are pleased to offer a program that explores program evaluation, experiential learning, and pharmacy practice research. Combined with recognizing our outstanding researchers at the awards and poster presentations, we are confident you will have an enjoyable and productive conference. In addition, we hope you enjoy the tour and banquet at the Winnipeg Art Gallery, and have a chance to explore Winnipeg with friends and colleagues for a relaxing Sunday (Mother's Day) evening.

On behalf of the entire planning committee, I hope you have an excellent conference, an opportunity to spend time with friends, and an excellent stay with us in Winnipeg!

Sincerely,
Lavern M. Vercaigne, Pharm.D.
Chair, AFPC Annual General Meeting

AFPC CONFERENCE 2002

"Educational Excellence: An Endless Horizon for Learning"

Saturday, May 11 – 13, 2002
Winnipeg Convention Centre
Winnipeg, Manitoba

Friday, May 10 – AFPC Executive & Council will meet in Cecil Richards Suite from 8 AM until 5 PM.

Saturday, May 11:

8:00 - 8:45 a.m. Continental Breakfast (Room 2)

8:45 a.m. **Welcome to the AFPC Conference 2002**
Fred Rémillard, President
Lavern Vercaigne, Conference Chair

9:00 a.m.- 12:00 noon **Teachers Conference I** (Room 2)
Program Evaluation
David Fielding, University of British Columbia

Goals: Canadian Faculties of Pharmacy have indicated an ongoing need to gather evidence of program quality as well as data to focus on program refinements and improvements. Participants in this one-day workshop will collectively design a template to conduct formal and informal educational program evaluations to meet this need. As well, this workshop will provide an opportunity for each Canadian Faculty of Pharmacy to build the capacity to conduct credible education program evaluations.

12:00 -1:00 p.m. Buffet Lunch (Room 2)

1:00 – 4:00 p.m. **Program Evaluation Teachers Conference** *(cont'd)*

5:30 – 6:30 p.m. **Winnipeg Art Gallery Cocktails and Gallery Visit**
(Winnipeg Art Gallery)

6:30 p.m. **AFPC Banquet & Awards Recognition**
(Winnipeg Art Gallery)
Wayne Hindmarsh, University of Toronto (Master of Ceremonies)

Sunday, May 12

7:00 a.m. - 8:30 a.m. Breakfast with CPhA (Bagels and Coffee) (East Concourse)

8:30 a.m. – 11:30 a.m. **Teachers Conference II** (Room 2)

Sunday, May 12

8:30--10:15 **Experiential Learning** *Rehana Durocher, University of Manitoba*
Gilles Leclerc, Guylaine Bertrand, Université de Montréal

Presenters from the Université de Montréal will describe the structure of their experiential program (4th year clinical clerkship), present an overview of their program evaluation process and comment on the impact of that process on the program and in other areas of the curriculum.

10:30-11:30 **Experiential Education Task Force Discussions** *David Hill, University of British Columbia*

Dr. Hill will introduce the Task Force on Experiential Education and discuss important issues that are common to many of the Pharmacy programs across Canada.

11:45 a.m.-1:45 p.m. **AFPC Annual General Meeting** & Buffet Lunch (Room 2)

2:00 p.m.- 4:45 p.m. **AFPC Awards Presentations** (Room 2)
Sylvie Marleau, Université de Montréal

The 2002 AFPC Award Winners will be making their presentations:

Janssen-Ortho Pharmaceutical Research Award
– ***Thérèse Di Paolo-Chenevert, Université Laval***

Bristol-Myers Squibb National Award for Excellence in Education
– ***Claude Mailhot, Université de Montréal***

AstraZeneca New Investigator Award
– ***Kishor Wasan, University of British Columbia***

AFPC/ADPC Graduate Student Research Award
– ***Erica Rosemond, University of Toronto***

Evening *A* "night off" for Mother's Day!

Monday, May 13

7:00 – 8:30 a.m. **Novopharm Heritage Breakfast** (with CPhA) (Rooms 1 & 2)

8:45 – 10:00 a.m. *CPhA Event: Roy Romanow Presentation* (Room 3 & 4)

10:30 – 12:30 p.m**. AFPC/Merck Frosst Pharmacy Practice Research Symposium**
"Health Services Research: Proving the Value of the Pharmacist" (Room 5)
Colleen Metge,University of Manitoba
Ingrid Sketris, Dalhousie University
Neil MacKinnon, Dalhousie University
Ross Tsuyuki, University of Alberta
Judy Soon, University of British Columbia

The goal of health services research (HSR) is to provide information that will eventually lead to improvements in the health of the citizenry. In this session, the participant will be introduced to the concepts of HSR and how they have been applied to pharmacy practice research. We will highlight the teams of investigators from across the Canadian Faculties of Pharmacy working in this relatively new area of research for pharmacy.

10:00 a.m. – 3:00 p.m. **Pharmacy Practice, Pharmaceutical Science and Pharmacy Education Posters available for viewing (Hall B) – *see poster abstracts on page***

12:30 p.m. – 3:00 p.m. **Poster Session and Lunch (Hall B)**
Concurrent with CPhA displays
Frank Burczynski, Sheryl Zelenitsky, University of Manitoba

1:00 p.m.- 3:30 p.m. New Council Meeting (Room 11)

DETAILED CONFERENCE PROGRAM INCLUDING ABSTRACT OF PRESENTATIONS AND HANDOUTS

"Educational Excellence: An Endless Horizon for Learning"

Saturday, May 11 – 13, 2002
Winnipeg Convention Centre
Winnipeg, Manitoba

Saturday, May 11:

8:00 - 8:45 a.m.	Continental Breakfast	(Room 2)
8:45 a.m.	**Welcome to the AFPC Conference 2002** Fred Rémillard, President Lavern Vercaigne, Conference Chair	

9:00 – 4:30 PM **Teachers Conference I** (Room 2)
Program Evaluation Workshop

Facilitator:	David W. Fielding, Ed.D. Professor and Dr. Tong Louie Chair in Pharmacy Administration, Faculty of Pharmaceutical Sciences, The University of British Columbia.
Description:	Pharmacy educators want and need evidence of the quality of their various programs. Such information is essential for purposes of self-reflection, accreditation, communication with critical stakeholders and program improvement. Participants in this workshop will **work** in small groups and develop a process for evaluation of pharmacy undergraduate programs. Participants in this workshop will leave with an enhanced capacity to implement credible educational program evaluations.
Objectives:	At the conclusion of this workshop participants will be able to: 1. Define (What is it?) and differentiate educational program evaluation (When and how is it used?) from concepts such as assessment, measurement. 2. Develop a comprehensive list of essential program elements for pharmacy undergraduate programs in Canada. 3. Develop a comprehensive list of evaluation criteria to be applied to the essential program elements of pharmacy undergraduate programs in Canada. 4. For each program element, identify its objective(s). 5. For each program element, indicate the types of evidence (evaluation data) to be gathered to measure degree its objective(s)

is/are meet.
6. For each program element, propose a mechanism for how, when, and by whom evaluation data should be gathered.
7. For each program element, develop guidance for judging quality.
8. Develop general guidelines for implementation of program evaluation strategy in Canadian Undergraduate Programs.

Program Outline:

Activity Number	Activity	Time	LG/ SM Group	Who
1	Introduction Workshop Explained Workshop Overview Workshop Objectives "Evaluation" Overview Sm. Group Assignments	9:00 – 9:30	Large Group	DWF
2	Refinement of program elements/ evidence and judgment items	9:30 – 10:15	Small Groups	All
3	Reports	10:15 – 11:00	LG/ SM Groups	All
4	Application of framework to U/G Program	11:00 – 11:45	LG/ SM Groups	All
5	Lunch	12:00 – 1:00		
6	Reports	1:00 – 1:45	LG/ SM Groups	All
7	Application of framework to U/G Program Continued	1:45 – 2:30	LG/ SM Groups	All
8	Report	2:30 – 3:15	LG/ SM Groups	All
9	Development of Guidelines for Program Evaluation in Canadian Faculties of Pharmacy	3:15 – 4:15	LG/ SM Groups	All
10	Evaluation	4:15 – 4:30	Individual	

Sunday, May 12

8:30 a.m. – 11:30 a.m. **Teachers Conference II** (Room 2)

8:30--10:15 **Experiential Learning** *Rehana Durocher, University of Manitoba*
Gilles Leclerc, Guylaine Bertrand, Université de Montréal

Undergraduate pharmacy clinical clerkships

The University of Montreal Faculty of pharmacy experience.

Presenters from the University of Montréal will describe the structure of their experiential program (4th year clinical clerkship), give an overview of their program evaluation process and comment the impact of that process on the program and on other areas of the curriculum.

Summary

Since the 1996 clerkship revision, two clerkships are mandatory for pharmacy students at the University of Montreal, one in the community setting and one in the hospital setting. For these clerkships, goal, educational outcomes and course structure have been developed to manage a performance-based evaluation process reflecting pharmaceutical care concept. A 1:1 supervision with a pharmacist(associate clinician) acting as role model with delegated responsibilities for student supervision and evaluation led to the establishment of a preceptor recruitment process and a preceptorship training program. The training program, based on adult and self-learning principles, allows associate clinicians to understand all aspects needed for efficient student supervision and evaluation during the clerkships. Performance-based evaluation forms were designed and specific evaluation directives were developed to provide the most objectivity to the process by guiding and supporting associate clinicians in their student evaluation role. Program evaluations are performed consistently and feedback is provided to the clinical sites, associate clinicians, trainers, clerkship management team and to other areas of the curriculum to increase efficiency of the learning processes. The recent increase in the number of pharmacy students and the vision of a revised pharmacy program with additional clerkships defines new challenges for the team.

Learning objectives:

At the end of the session, the participant will be able to understand:

1. The process used for selecting, and training pharmacists to become associate clinicians.
2. The role of the pharmacist as an assessor for 4th year pharmacy students in clinical clerkships.
3. The process used for evaluating students in clinical settings using a criterion-based evaluation form.
4. The process used for identifying problem learners and dealing with these difficult situations.
5. The process used for communicating with other areas of the curriculum to make modifications using some outcomes from the clinical evaluation process.
6. The process used for an evaluation program for the clinical sites and associate clinicians.

HANDOUT FOR CLINICAL CLERKSHIP SESSION

Gilles Leclerc, Guylaine Bertrand, Université de Montréal

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10:30-11:30 Experiential Education Task Force Discussions

David Hill, University of British Columbia

Dr. Hill will introduce the Task Force on Experiential Education and discuss important issues that are common to many of the Pharmacy programs across Canada. He will also seek audience views regarding the specific issues.

Task Force on Experiential Education

Draft Terms of Reference

Background

At its 2001 annual meeting, AFPC council approved the formation of a task force to identify and clarify issues facing the structured practice education training programs (SPEP) offered by pharmacy schools in Canada. Council's action was prompted by advice from a variety of organizations and segments of the profession that has raised questions about the curriculum, preceptor instructional support, clinical site availability, student concerns, and other issues relating to the design and delivery of practice education programs by the schools. The schools also have identified features of the planning and management of effective clinical training programs for undergraduates that are problematic and need attention from a broader cross section of academia and the practice community.

Objectives of the Task Force Project

1. To identify and clarify the issues facing experiential learning for pharmacy programs in Canada.
2. To develop a strategy for addressing these issues with the resources that are available to the task force.
3. To formulate options or strategies for recognition of the costs of experiential education to schools of pharmacy resulting from the placement of students in hospital and community pharmacies and other agencies for clinical learning.

11:45 a.m.-1:45 p.m. **AFPC Annual General Meeting** & **Buffet Lunch** (Room 2)

ANNUAL GENERAL MEETING AGENDA

1.0 Opening Remarks - President Fred Rémillard

2.0 Acceptance of 2001 Annual General Meeting Minutes
- Saturday, June 16, 2001

3.0 Conference Committee Announcements - Lavern Vercaigne

4.0 Greetings

4.1 Dr. Richard Penna, Executive Vice President,
American Association of Colleges of Pharmacy

5.0 Memorial to Deceased Members
Dr. Norman Hughes

6.0 President Address - Fred Rémillard

7.0 AFPC Committee Reports

7.1 Awards Committee Report – Sylvie Marleau

7.2 Nominations Committee Report - David Fielding

7.3 Bylaws Committee Report - David Fielding
- notification of approved bylaws

7.4 Education Committee Report - David Fielding

7.5 Research Committee Report - Pierre Bélanger

7.6 Communications Committee Report - Simon Albon

8.0 Reports from Special Committees and Delegates

8.1 Appointee of the Association of Deans of Pharmacy of Canada - Wayne Hindmarsh
8.2 Academic Board Member of the Canadian Pharmacists Association - Keith Simons
8.3 Appointees to the Canadian Council for the Accreditation of Pharmacy Programs - Sylvie Marleau & Jake Thiessen
8.4 Appointee to the Canadian Council on Continuing Education in Pharmacy - Marc Desgagné

8.5 Task Force on Experiential Education - David Hill
8.6 Report of Representative to CPhA Pharmacy Human Resources Planning Team
- David Hill
8.7 Romanow Commission Submission - Monique Richer and David Hill

9.0 Report of Executive Director - Jim Blackburn

10.0 Audited 2001 Financial Statements and Budget for 2002
- report of auditor

11.0 Appointment of Auditor

12.0 New Business

13.0 Transfer of Presidency

14.0 Confirmation of Signing Authority

15.0 Adjournment

2:00 p.m.- 4:45 p.m. AFPC Awards Presentations (Room 2)

Sylvie Marleau, Université de Montréal

The 2002 AFPC Award Winners will be making their presentations:

2:00 – 2:40 PM Janssen-Ortho Pharmaceutical Research Award – *Thérèse Di Paolo-Chenevert, Université Laval*

NEUROMODULATION AND NEUROPROTECTION OF BRAIN NEUROTRANSMISSION: POTENTIAL THERAPEUTIC APPLICATION FOR SCHIZOPHRENIA AND PARKINSON'S DISEASE

Thérèse Di Paolo
Faculty of pharmacy, Laval University and Molecular Endocrinology and Oncology Research Center, CHUL, Quebec, G1V 4G2, Canada.

Molecular investigations as well as clinical studies demonstrate the potency of estrogens to modulate brain function and their implication in schizophrenia. Our laboratory has established alterations of dopaminergic, GABAergic, glutamatergic and serotonergic neurotransmission through estrogen-mediated mechanisms. Genomic and non-genomic mechanisms of actions of estrogens in the brain have been investigated implicating nuclear estrogen receptors as well as possible estrogen membrane receptors, antioxidant activity of steroids and their effect on fluidity. Estrogen-like activity in the brain has been sought with estrogens and with steroids possibly acting as pro-drugs of estrogens such as testosterone and dehydroepiandrosterone (DHEA) as well as selective estrogen receptor modulators (SERMs). Drugs with estrogen activity in the brain may have therapeutic potential either by modulating brain neurotransmitter transmission or through neuroprotective activity. Indeed, studies using in vivo and in vitro models as well as epidemiological data suggest that estrogens provide neuroprotection of central nervous system (CNS) cells implicated in the etiology of neurodegenerative disorders such Parkinson's (PD) disease. In an animal model of Parkinson's disease our group has shown neuroprotection against MPTP toxicity in mice by estradiol, progesterone, DHEA and raloxifene whereas the androgens testosterone and dihydrotestosterone are inactive. In MPTP monkeys and human Parkinsonian brains we investigated the modulation of dopamine transmission by neuropeptides as well as GABAergic transmission. Increase mRNA levels of striatal preproenkephalin and pallidal GABAa receptors are associated with overactive (dyskinetic) dopaminergic activity. Steroid, peptide and neurotransmitter interactions play an important role in the brain and should be considered to improve existing drugs treatments.

2:40 – 3:20 PM Bristol-Myers Squibb National Award for Excellence in Education – *Claude Mailhot, Université de Montréal*

Faculty development, students development and assessment of the program at the Faculty of pharmacy, University of Montreal.

Claude Mailhot, Pharm.D.
Associate dean for academic affairs

The Faculty of pharmacy improved teaching and learning within the Baccalaureate program by :
1) offering individualized professor training to new Faculty members;
2) regularly presenting pedagogy workshops and lectures for all Faculty members;
3) revising teaching evaluation methods and integrating the evaluation in a model of teaching improvement with results presented in a formative format;
4) recognizing teaching efforts by implementing teaching awards.

New complementary activities have been developed for enhancing professionalism in pharmacy students: 1) career week with community, hospital and industry pharmacists; and 2) brown bag days for elderly patients in our pharmacy practice laboratory.

We evaluated the impact of changes to the program on the practice of our graduates in community pharmacy. For each of the pharmaceutical steps, we questioned graduates on their abilities to perform different tasks, their actual use of the process and their perception of training during their Baccalaureate program. Satisfaction level with the program were above 80% for every element except communication with physicians. This study insures efficiency of the program in pharmacy practice

3:40 – 4:10 PM **AstraZeneca New Investigator Award –** ***Kishor Wasan, University of British Columbia***

Speaker: Dr. Kishor M. Wasan, Associate Professor & Chair, Division of Pharmaceutics & Biopharmaceutics, Faculty of Pharmaceutical Sciences, University of British Columbia

Title: **The role of plasma lipoproteins in modifying the biological activity of hydrophobic drugs.**

Abstract

The plasma lipoprotein distribution of potential drug candidates is not commonly studies. For some hydrophobic drug candidates and compounds formulated into lipid-based drug carriers, attainment of similar plasma free drug levels has not been associated with uniform production of pharmacological activity in different animal species. It is well known that plasma lipoprotein lipid profiles vary considerably between different animal species. In addition, human disease states can significantly influence plasma lipoprotein profiles, resulting in altered therapeutic outcomes. Current research has shown that lipoprotein binding of drug compounds can significantly influence not only the pharmacological and pharmacokinetic properties of the drug, but the relative toxicity as well. Elucidation of drug distribution among plasma lipoproteins is expected to yield valuable insight into the factors governing the pharmacological activity and potential toxicity of the drug. This presentation will present an historical perspective and summarize the latest research in the area of lipoprotein-drug interactions.

4:15 – 4:45 PM **AFPC/ADPC Graduate Student Research Award –** ***Erica Rosemond, University of Toronto***

MAPPING THE AGONIST BINDING SITE OF METABOTROPIC GLUTAMATE RECEPTORS. E. Rosemond, Peltekova V., Naples M., Thøgersen H., and Hampson D.R. Department of Pharmaceutical Sciences and Institute for Drug Research, University of Toronto and Novo Nordisk A/S Denmark.

The family of eight metabotropic glutamate receptors (mGluRs) is currently the focus of considerable attention due to their potential as drug targets for the treatment of a number of psychiatric and neurological disorders. It has been demonstrated that agonists that activate the Group III mGluRs have neuroprotective properties *in vitro* and *in vivo*. This provides a valid argument, in the context of drug development, for studying the structures of this family of receptors. The purpose of this study was to identify the amino acids that mediate high affinity ligand binding of the specific agonist L-2-amino-4-phosphonobutyric acid (L-AP4) to the mGluR4 receptor subtype. The amino terminal domain (ATD) of the mGluRs resembles a Venus-Flytrap plant in which a hinge region connects two globular lobes. A computer-generated structural model of the ATD of mGluR4 was produced based on the crystal structure of the mGluR1 receptor subtype, which is approximately 40% identical in amino acid sequence with mGluR4. Using this model as a template, a thorough investigation of the amino acids within the vicinity of the putative ligand binding pocket was examined using site-directed mutagenesis and [^{3}H]-L-AP4 binding. Our results demonstrate that the amino acids involved in high affinity binding of [^{3}H]-L-AP4 are interspersed on both globular lobes of mGluR4. Furthermore, our study indicates that L-AP4 *selectivity* is restricted by 3-5 amino acids within the binding pocket that combine to create a positively charged microenvironment in which the negatively charged phosphate moiety of L-AP4 may enter the cleft and bind. Our data reveal important differences between members of the mGluRs that may have important implications for the design of highly selective mGluR ligands.
*This work was supported by the Canadian Institutes of Health Research.

Monday, May 13

7:00 – 8:30 a.m. **Novopharm Heritage Breakfast** (with CPhA) (Rooms 1 & 2)
part of CPhA program

8:45 – 10:00 a.m. *CPhA Event: Roy Romanow Presentation* (Room 3 & 4)
part of CPhA program

Monday, May 13

10:30 – 12:30 p.m. AFPC/Merck Frosst Pharmacy Practice Research Symposium

"Health Services Research: Proving the Value of the Pharmacist" (Room 5)

Colleen Metge,University of Manitoba
Ingrid Sketris, Dalhousie University
Neil MacKinnon, Dalhousie University
Ross Tsuyuki, University of Alberta
Judy Soon, University of British Columbia

The goal of health services research (HSR) is to provide information that will eventually lead to improvements in the health of the citizenry. In this session, the participant will be introduced to the concepts of HSR and how they have been applied to pharmacy practice research. We will highlight the teams of investigators from across the Canadian Faculties of Pharmacy working in this relatively new area of research for pharmacy..

10:30 - 10:50
Health Services Research: Proving the Value of Pharmacists
The 30,000 foot view

Colleen J. Metge, B.Sc.(Pharm.), PhD.
Associate Professor
Faculty of Pharmacy, University of Manitoba

A quick review of a taxonomy of health services research and how it applies to pharmacy and pharmacists will be offered. In addition, participants will have a 30,000 foot view of pharmacy-based health services research in Canada. Health services research as it applies to the Manitoba pharmacy community will also be reviewed. The application of health services research to health care reform and pharmacy education will be demonstrated.

10:50 - 11:15
Health Services Research: Evaluating the Quality of Medication Use and Pharmacy Services in Atlantic Canada

Neil J. M^{ac}Kinnon, Ph.D., R.Ph., Assistant Professor, College of Pharmacy, Dalhousie University

The objectives of this presentation are to: (1) describe the development and use of quality indicators of medication use in Nova Scotia and the issues for researchers and practitioners, (2) discuss the evaluation of a pharmacist-directed seamless care service in Moncton, New Brunswick and the issues for researchers and practitioners, and (3)

consider how the results of these two studies apply to healthcare reform and pharmacy education.

Issues related to HSR for pharmacy researchers to be discussed include: working with healthcare databases, promoting uptake of research results by decision makers, encouraging the multiplication of research activities, costs and benefits of conducting research with practitioners, and organizing research teams in "excellence" areas.

Issues related to HSR for pharmacists to be discussed include: fostering on-going monitoring of drug-related problems in the elderly, the use of medication use performance measures, collecting evidence of the value of pharmacy services, and changing pharmacy standards of care.

Issues related to HSR for health policy makers to be discussed include: recognizing the costs of adverse-drug related outcomes, emphasizing medical technology and preventive medicine, re-organizing financial incentives to promote seamless care.

Issues related to HSR for pharmacy educators to be discussed include: teaching of the medication use system at the "macro" level, training graduate students in HSR, teaching seamless care in our educational model, and teaching outcomes measurement.

11:15 - 11:40
Health Services Research: Proving the Value of Pharmacists. The SCRIP and REACT Studies.
Ross T. Tsuyuki, PharmD, MSc, FCSHP. Associate Professor of Medicine, Division of Cardiology, University of Alberta.

Cardiovascular disease is the leading cause of mortality and morbidity in Canada. Although much emphasis is placed on in-hospital care, preventive measures are clearly best delivered in the community. Pharmacists are well-placed to facilitate preventive cardiology, however we must prove the efficacy of these activities before moving forward. This presentation will focus on the results of 2 recently completed studies, the Study of Cardiovascular Risk Intervention by Pharmacists (SCRIP), and the Review of Education on ACE inhibitors in Congestive heart failure Treatment (REACT).

11:40 - 12:05
Dr. Judith Soon, B.Sc.(Pharm.), M.Sc., PhD.
Assistant Professor
Faculty of Pharmaceutical Sciences, University of British Columbia.

Community pharmacists in British Columbia were the first in Canada to be granted independent prescribing authority for emergency contraceptive pills (ECPs), which are used to prevent unintended pregnancy. This presentation will (1) review the analysis on patterns and trends of pharmacist-initatieated ECP prescribing 9 months post-policy change and (2) outline the attitudes and practices of ECP-pharmacist providers. How independent prescribing authority may have lessons for health care reform and pharmacy education will be explored.

12:05 - 12:30 pm

Panel Discussion: All presenters

A question and answer segment will explore the application of pharmacy-based health services research to health care reform and pharmacy education.

10:00 a.m. – 3:00 p.m.	**Pharmacy Practice, Pharmaceutical Science and Pharmacy Education Posters available for viewing (Hall B)**
12:30 p.m. – 3:00 p.m.	**Poster Session and Lunch (Hall B) Concurrent with CPhA displays** *Frank Burczynski, Sheryl Zelenitsky, University of Manitoba*

ALPHABETICAL LISTING OF AFPC POSTER PRESENTATIONS
(according to underlined name on poster)

PE – 1 **THE NEW PHARM.D. CURRICULUM AT THE UNIVERSITY OF COLORADO SCHOOL OF PHARMACY**

Ralph J. Altiere, Christopher J. Turner and the Curriculum Committee*
University of Colorado Health Sciences Center School of Pharmacy, Denver, CO USA 80262-0238

PS – 1 **A NEW PEPTIDE-LIPOSOMES/PROTAMINE/DNA (LPD) COMPLEX FOR HEPATOCYTE-SELECTIVE TARGETING**

Anas El-Aneed, Zhili Kang, Mohamedtaki Kara and Hu Liu
School of Pharmacy, Memorial University of Newfoundland, St John's, NF, A1B 3V6.

PS – 2 **OXIDATIVE STRESS IN HEPATOCYTES: ROLE OF FATTY ACID BINDING PROTEIN**

Frank J. Burczynski, Jennifer C. Bonnetta, Ganesh Rajaraman, Guqi Wang
Faculty of Pharmacy, University of Manitoba

PS - 3 **THE EFFECT OF DHA ON THE CYTOTOXICITY OF TAXOL IN HUMAN BREAST CARCINOMA MCF-7 AND MDA-MB-231 CELLS**

Krista B. Butt and Lili Wang
School of Pharmacy, Memorial University of Newfoundland, St. John's, NF., Canada, A1B 3V6

PE – 2 **DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A PRECEPTOR EDUCATIONAL PROGRAM FOR A STRUCTURED PRACTICAL EXPERIENCE PROGRAM.**

Lesley A. Lavack[1], Andrea J. Cameron[1], Hilja M. Toom[1], Lori Blain[2], Barb J. Farrell[3], Lalitha Raman-Wilms[1] [1]University of Toronto, Toronto, [2]Surrey, British Columbia, [3]Sisters of Charity Health Services, Ottawa.

PP – 1 **EVALUATION OF EFFICACY AND SAFETY OF THE COMBINATION OF ONDANSETRON, DEXAMETHASONE AND PROCHLORPERAZINE IN THE PREVENTION OF NAUSEA AND VOMITING CAUSED BY CHEMOTHERAPY FOR PATIENTS WITH BREAST CANCER.**

Julie Cormier[1,2], pharmacy student, Anne Dionne[1,2], M. Sc., BCOP
(1) Faculté de pharmacie, Université Laval (2) CHA-Hôpital du St-Sacrement

PP – 2 **THE IMPACT OF A CLINICAL PHARMACIST ON PATIENT AND ECONOMIC OUTCOMES ON THE CHILD AND ADOLESCENT MENTAL HEALTH UNIT AT THE IWK HEALTH CENTRE.**

[1]Natalie A. Crown, [1,2]Adil S. Virani, B. Sc. (Pharm), Pharm D.
[1]College of Pharmacy, Dalhousie University, Halifax NS [2]IWK Health Centre, Halifax NS

PE – 3 **DEVELOPMENT AND IMPLEMENTATION OF A RECRUTMENT STRATEGY FOR THE DALHOUSIE COLLEGE OF PHARMACY**

Rita Caldwell, Anne M. Whelan, Robert Drobitch, Laura McDonald, Shakara Clouston
College of Pharmacy, Dalhousie University, Halifax, Nova Scotia, Canada

PS – 4 **TOPICAL ADMINISTRATION OF HYDROXYZINE FOR ALLERGIC SKIN DISORDERS USING LIPOSOMAL FORMULATIONS IN A RABBIT MODEL**

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PS – 5 **TOPICAL ADMINISTRATION OF CETIRIZINE FOR ALLERGIC SKIN DISORDERS USING LIPOSOMAL FORMULATIONS IN A RABBIT MODEL**

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PE – 4 **DEVELOPMENT OF A CRITICALLY EVALUATED, DISEASE-BASED HERBAL MEDICINE GUIDE FOR PHARMACISTS: GYNECOLOGICAL DISORDERS.**

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PP – 3 **SECONDARY PREVENTION OF CORONARY ARTERY DISEASE (CAD): ANTIPLATELET UTILIZATION IN A COMMUNITY PHARMACY.**

Alan Gervais, BSP, Major R. Vaillancourt, B Pharm, Pharm D, Directorate of Medical Policy, Pharmacy Policies and Standards, Canadian Forces Health Services, Ottawa, Ontario

PS – 6 **EVALUATION OF THREE HYDROPHILIC METRIX POLYMERS FOR MODIFIED DRUG RELEASE OF ACRIVASTINE AND PSEUDOEPHEDRINE**

Xiaochen Gu[1], Daryl J. Fediuk[1], Keith J. Simons[1], Estelle R. Simons[2]
[1]Faculty of Pharmacy, [2]Department of Pediatrics and Child Health, University of Manitoba

PP – 4 **THE IMPACT OF TREATMENT WITH ANTIDEPRESSANT (AD) DRUG THERAPY ON THE UTILIZATION OF PROTON PUMP INHIBITORS (PPI) OR HISTAMINE 2 ANTAGONISTS (H2)**

M. Guillemette, BPharm Student, Major R. Vaillancourt PharmD, L. Maria Gutschi, PharmD. Directorate of Medical Policy, Pharmacy Policy and Standards, Canadian Forces Health Services, Ottawa, ON

PP – 5 **ANTIDEPRESSANT DRUG UTILIZATION: DRUG USE PATTERNS, CHRONIC MEDICAL CONDITIONS AND CONCURRENT DRUG USE IN THE CANADIAN FORCES**

L. Maria Gutschi[1], PharmD, Drug Utilization Pharmacist, Major Régis Vaillancourt[1], PharmD, Clinical Advisor, Colonel R Boddam[2], MD, Mental Health Advisor, [1]Pharmacy Policy and Standards, Directorate of Medical Policy, and [2]Health Services Delivery, Canadian Forces Health Services, Ottawa, ON

PP – 6 **Secondary Prevention of Coronary Artery Disease: Antiplatelet Utilization**

L. Maria Gutschi[1], PharmD, and Major Régis Vaillancourt[1] PharmD, [1]Directorate of Medical Policy, Pharmacy Policy and Standards, Canadian Forces Health Services, Ottawa, Lisa Dolovich[2–] PharmD, and Paul Grootendorst[2] PhD, [2]Centre for Evaluation of Medicines, St. Joseph's Hospital, Hamilton

PE – 5 **DEVELOPMENT AND IMPLEMENTATION OF CROSS-DISCIPLINARY CASE-BASED PROBLEMS USING THE FACULTY OF PHARMACEUTICAL SCIENCES' WEB-BASED LEARNING CENTRE (WBLC).**

Philip L. Y. Hui, Lynda M. Eccott, Simon P. Albon
Faculty of Pharmaceutical Sciences, University of British Columbia

PS – 7 **EFFECTS OF QUERCETIN AND RUTIN ON LIPID PEROXIDATION INDUCED BY HYDROPHILIC AND LIPOPHILIC FREE RADICAL GENERATORS**

Ping Jiang[1], Frank J. Burczynski[1], Grant N. Pierce[2], and Colin J. Briggs[1]

PS – 8 **SYNTHESIS AND CHARACTERISATION OF NOVEL pH-SENSITIVE UNIMOLECULAR POLYMERIC MICELLES AS POTENTIAL CARRIERS FOR THE ORAL DELIVERY OF HYDROPHOBIC DRUGS.**

Marie-Christine Jones[1], Maxime Ranger[2] and Jean-Christophe Leroux[1],
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PS – 9 **PRELIMINARY ASSESSMENT OF PERCUTANEOUS PENETRATION OF BENZOPHENONE-3 AND N,N-DIETHYL-M-TOLUAMIDE IN VITRO**

Sreeneeranj Kasichayanula, Frank J. Burczynski, Vikram P. Sarveiya, Xiaochen Gu
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PS – 10 **ANTISENSE EVIDENCE FOR NF-κB-MEDIATED SIGNAL TRANSDUCTION IN THE MECHANISM OF PHENYTOIN EMBRYOPATHIES.**

Julia C. Kennedy[1] and Peter G. Wells[1,2]. [1]Faculty of Pharmacy and [2]Department of Pharmacology, University of Toronto, Toronto, Ontario, M5S 2S2

PP – 7 **STRUCTURAL ELEMENTS ASSOCIATED WITH THE PROVISION OF PHARMACEUTICAL CARE IN COMMUNITY PHARMACY PRACTICE IN CANADA**

John Ramaswamy-Krishnarajan[1], Dr. David S Hill[2], Dr. Timothy-John Grainger-Rousseau[3],
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PS – 11 **PHARMACOGENETICS OF CODEINE BIOACTIVATION IN PEDIATRIC DENTAL PATIENTS: DEVELOPMENT OF A REAL-TIME, RAPID-CYCLE METHOD FOR CYP2D6*10 GENOTYPING**

Evan H. Kwong, Thomas K. H. Chang, and Marc Levine.
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PS – 12 **ULTRASENSITIVE IMMUNOASSAY FOR THE DETECTION OF THE WALKERTON PATHOGEN ESCHERICHIA COLI O157**

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PE – 6 **MULTIPLE-CHOICE PROGRESS EXAMINATION: COMPARISON OF TRADITIONAL AND PBL-BASED CURRICULA: INTERIM ANALYSIS**

Anne M. Whelan, Susan Mansour, Patrick Farmer
College of Pharmacy, Dalhousie University, Halifax, Nova Scotia, Canada

PP – 8 **Influence of the menstrual cycle on the timing of acute coronary events in young with coronary artery disease**

Méthot Julie, Bogaty Peter, Poirier Paul, Arsenault Marie, Pilote Sylvie, Plante Sylvain, Hamelin Bettina A.; Faculté de Pharmacie, Université Laval

PE – 7 **The Evaluation Profile for the Faculty of Pharmaceutical Science's Web-Based Learning Centre (WBLC).**

Claire L. Moffett, Michael D. Pungente, Simon P. Albon
Faculty of Pharmaceutical Sciences, The University of British Columbia

PS – 13 **EXPRESSION ANALYSIS OF HOXA2 GENE DURING OLIGODENDROGENESIS**

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[1]College of Pharmacy and Nutrition [2]Department of Anatomy & Cell Biology
University of Saskatchewan, Saskatoon, SK S7N 5C9

PS – 14 **EFFECT OF MODULATION OF LIVER FATTY ACID BINDING PROTEIN LEVELS ON HEPATOCYTE MITOTIC ACTIVITY**

Ganesh Rajaraman, Sheri Fandrey, Guqi Wang, and Frank J. Burczynski
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PP – 9 **PHYSICIAN'S BELIEFS AND PERCEPTIONS OF THE ALBERTA TRIAL PRESCRIPTION PROGRAM**

Sandra Rees, Leah Lechelt, Harold Lopatka.
University of Alberta, Lechelt Communications, University of Alberta

PS – 15 **EFFECT OF IONIZATION ON PENETRATION OF IBUPROFEN THROUGH POLYDIMETHYLSILOXANE MEMBRANE**

Vikram P. Sarveiya [a] and Heather A.E. Benson [b]

PP – 10 **COMMUNITY PHARMACY PRACTICE RESEARCH IN CANADA DURING THE LAST DECADE: A CRITICAL ANALYSIS OF THE LITERATURE[1]**

Hanan B. Sokar-Todd[2], PhD and Thomas R. Einarson, PhD
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PE – 8 **INTRODUCTORY EXPERIENTIAL COURSES IN AN ENTRY-LEVEL PHARM.D. PROGRAM**

Christopher J. Turner, Ralph Altiere, Larry Clark, Catherine Jarvis, Joel Giles and Carrie Maffeo; University of Colorado Health Sciences Center School of Pharmacy, Denver, Colorado, USA

PP – 11 **DRUG USE EVALUATION OF RESPIRATORY TRACT MEDICATIONS AMONG MEMBERS OF THE CANADIAN FORCES**

Maj R. Vaillancourt, BPharm, PharmD; J. Ma, BScPhm, PharmD; L.M. Gutschi, BScPhm, PharmD.; Canadian Forces Health Services, Deputy Chief of Staff - Medical Policy, Pharmacy Policy & Standards.

PP – 12 **EVALUATING THE EFFECTS OF CFC-FREE INHALER SUBSTITUTION AMONG CANADIAN FORCES MEMBERS: A CONTINUOUS QUALITY INITIATIVE**

Major Régis Vaillancourt, BPharm, PharmD, Janice Ma, BScPhm, PharmD, Brad Blanchard, BSc(Pharm), L. Maria Gutschi BScPhm, PharmD. Pharmacy Policy and Standards, Deputy Chief of Staff - Medical Policy, Canadian Forces Health Services, Ottawa, ON, CANADA

PP – 13 **EVALUATION OF PRESCRIBING COMPETENCE AMONG PHYSICIAN ASSISTANTS IN THE CANADIAN FORCES**

Maj Régis. Vaillancourt, BPharm, PharmD; J. Ma, BScPhm, PharmD.
Canadian Forces Health Services, Directorate of Medical Policy, Pharmacy Policy & Standards; N. Winslade, PharmD, MHPE; L. Schuwirth, MD, PhD.
Department of Educational Research and Development, University of Maastricht.

PP – 14 **PHARMACIST-BASED LIPID CLINICS - DEVELOPMENT AND IMPLEMENTATION IN THE CANADIAN FORCES**

Major Régis Vaillancourt, Pharm D, Clinical Pharmacy Advisor, L. Maria Gutschi, Pharm D, Drug Utilization Pharmacist, and Janice Ma, Pharm D, Pharmacy Consultant, from Directorate of Medical Policy, Pharmacy Policy and Standards, Canadian Forces Health Services Ottawa, ON, Captain Shannon Sinclair, Pharm D, Director of Pharmacy Services, Formation Health Services Unit (Pacific), Victoria, BC, Lieutenant-Commander Danette Beechinor, Director of Pharmacy Services, Formation Health Services (Halifax), Halifax, NS

PP – 15 **PROVISION OF NON-PRESCRIPTION MEDICATIONS TO CANADIAN FORCES MEMBERS THROUGH CIVILIAN PHARMACIES: A PILOT PROJECT**

Major Régis Vaillancourt, B. Pharm Pharm D; Alan Gervais, BSP, Michel Trottier, B.Sc.Phm. Directorate of Medical Policy, Pharmacy Policy and Standards, Canadian Forces Health Services, Ottawa, ON

PS – 16 **INFECTION OF RAT MYOCYTES WITH *CHLAMYDIAE***

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PE – 9 **REVISION OF DALHOUSIE COLLEGE OF PHARMACY ADMISSIONS REQUIREMENTS, POLICIES AND PROCEDURES**

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[1] College of Pharmacy, Dalhousie University, Halifax, Nova Scotia, Canada
[2] Braha & Associates, Halifax, NS

PE – 10 **EDUCATIONAL EXPERIENCE AND PREPARATION FOR PROFESSIONAL PRACTICE: A SURVEY OF GRADUATING STUDENTS AND GRADUATES: INTERIM ANALYSIS**

Anne M. Whelan, Susan Mansour, Patrick Farmer, David Yung
College of Pharmacy, Dalhousie University, Halifax, Nova Scotia, Canada

POSTER PRESENTATIONS – PHARMACEUTICAL SCIENCES

PS – 1

A NEW PEPTIDE-LIPOSOMES/PROTAMINE/DNA (LPD) COMPLEX FOR HEPATOCYTE-SELECTIVE TARGETING

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PURPOSE: Cationic liposomes are non-viral vectors studied for cancer gene therapy. However, liposomal-mediated transfection levels in the liver are significantly lower than those observed in other organs such as the lungs. In this study, we evaluated the feasibility of coating the liposomal preparation liposomes/protamine/DNA LPD with a liver targeting ligand derived from malaria circumsporozoite (CS) protein.
METHODS: A novel derivative of a peptide sequence of the malaria CS protein was designed and synthesized. It was studied for its liver targeting potential for liposomal-mediated gene delivery. Transfection Experiment: PCMV53 plasmid containing the tumor suppressor gene p53 was used for the preparation of the liposomal preparation, LPD. The targeting ligand was added either in the final stage or during liposome preparation. The transfection experiments were executed using the rat liver cancer cell line McA RH 7777. Western blotting analysis was performed to determine p53 expression. Hemolytic assay: Hemolytic assays were evaluated by incubating different concentrations of the peptide with freshly isolated and properly washed rat erythrocytes.
RESULTS: The preliminary results showed an increased expression of human wt-p53 in cells treated with peptide-LPD complexes compared to that treated with LPD. While the peptide-LPD complexes prepared by inclusion the peptide in the final stage resulted in non-consistent outcomes, peptide-LPD complexes prepared by incorporating the peptide during liposome preparation yielded reproducible results. Hemolytic assay showed a maximum hemolytic activity of ~20% with peptide concentrations ≥300 ug/ml.
CONCLUSIONS: Liposomal-mediated transfection levels were elevated when the novel peptide was included in LPD preparation**.**

PS - 2

OXIDATIVE STRESS IN HEPATOCYTES: ROLE OF FATTY ACID BINDING PROTEIN

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PURPOSE: Fatty acid binding protein (FABP) is a cytosolic protein found in many tissues. The protein has been reported to bind intracellular free radicals. Thus, we tested the hypothesis that a further function of FABP is as an endogenous free radical scavenger in hepatocytes**. METHODS**: Rat hepatoma cells were incubated with (treated group) or without (control group) dexamethasone (0.5 □M, reduces FABP levels) for three days at 37°C (95% O_2/5% CO_2). Following incubation, cells were loaded with 10 □M dichlorodihydrofluorescein diacetate (DCF) at room temperature in the dark. After 35 minutes of incubation, cells were washed with warm phosphate buffered saline (PBS) and incubated at 37°C for a further 2.5 min. This procedure was repeated twice to remove any external DCF. Oxidative stress was induced by incubating cells with 2 mM H_2O_2 for 8 minutes at 37°C. Following incubation, cells were washed twice with warm PBS and further incubated in PBS at 37°C for 2.5 min. Image analysis was started immediately following final incubation. Hepatocytes were analyzed for the amount of fluorescence per cell area, which was taken as an index of intracellular reactive oxygen intermediates. **RESULTS**: Intracellular images from control and dexamethasone treated cells showed that incubation with dexamethasone resulted in a 290% increase in fluorescence per cell area (n= 161-256 cells, $p<0.01$). **CONCLUSION:** Dexamethasone treatment was associated with significantly higher levels of intracellular reactive oxygen intermediates. The decreased fluorescence in control cells likely resulted from the higher FABP levels.

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PS - 3

THE EFFECT OF DHA ON THE CYTOTOXICITY OF TAXOL IN HUMAN BREAST CARCINOMA MCF-7 AND MDA-MB-231 CELLS

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Introduction: It has been documented that exogenous polyunsaturated fatty acids (PUFAs), such as docosahexaenoic acid (DHA) can enhance the cytotoxicity of various anti-cancer drugs. However, currently little is known about the involvement of PUFAs in the modulation of anti-cancer drugs that do not induce *in vitro* peroxidation events, such as Taxol.

Objective: To determine the IC50 of Taxol in MCF-7 and MDA-MB-231 cells and to assess the effect of DHA on the cytotoxicity of Taxol in these cell lines respectively.

Methods: The MTT assay was carried out to determine cytotoxicity. Briefly, 2 x 10^4 cells/100 µl/well were plated in 8 replicates into 96 well microtitre plates and were incubated for 24 hours to allow adherence of cells. Taxol at 6.4 x 10^{-4} - 10 µM was added and incubated for 72 hours. Cells without Taxol added were used as a control. Percentage of cell survival was plotted against the concentration of Taxol and IC50 was defined as the concentration required for 50% inhibition. For assessment of the effects of DHA on the cytotoxicity of Taxol, varying concentrations of DHA (5-30 µM) was added to 0.0032 µM Taxol. Percentage of cell survival was plotted against the concentration of DHA.

Results: IC50 of Taxol alone was determined to be 0.040 µM for MCF-7 and 0.013 µM for MDA-MB-231 cells. The results of the effects of DHA on the cytotoxicity of Taxol (0.0032 µM) in MCF-7 and MDA-MB-231 cells are shown in Figures 1 and 2, respectively.

Conclusion: Our results indicate that DHA does not significantly enhance the cytotoxicity of Taxol in MCF-7 and MDA-MB-231 cells.

Figure 1: Cell Survival of MCF-7 Cells Treated with Varying Concentrations of DHA and 0.0032 µM Taxol

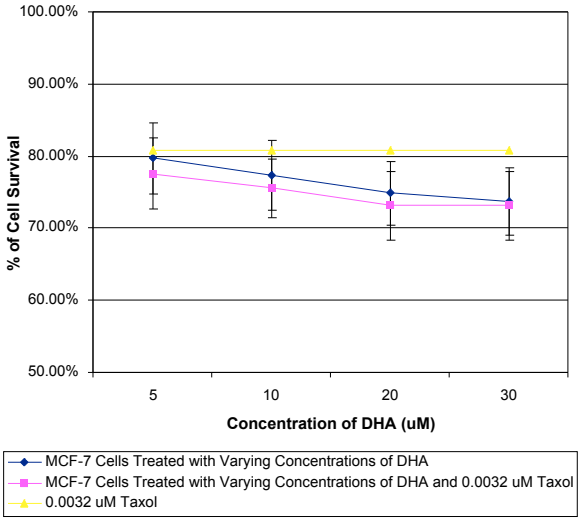
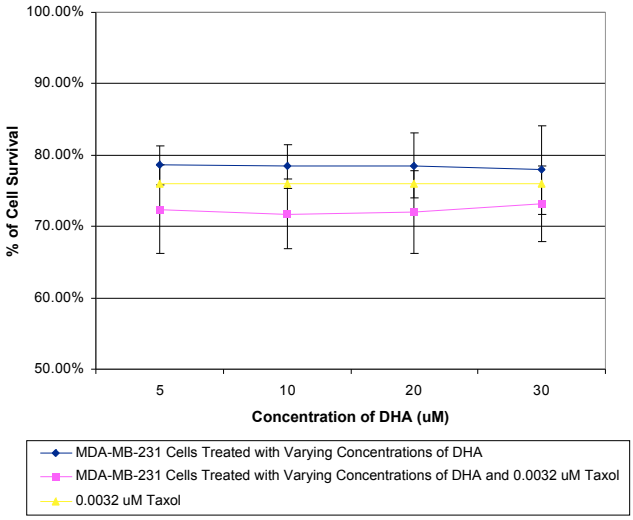


Figure 2: Cell Survival of MDA-MB-231 Cells Treated with Varying Concentrations of DHA and 0.0032 µM Taxol



PS – 4

TOPICAL ADMINISTRATION OF HYDROXYZINE FOR ALLERGIC SKIN DISORDERS USING LIPOSOMAL FORMULATIONS IN A RABBIT MODEL

Abeer AW. Elzainy[1], Xiaochen Gu[1], Estelle R. Simons[2], Keith J. Simons[1,2]
[1]Faculty of Pharmacy, and [2]Dept. of Pediatrics, University of Manitoba

PURPOSE: To measure the extent of hydroxyzine absorption and to assess the peripheral H_1-antihistamine activity from hydroxyzine liposome formulations applied to the skin of a rabbit model. **METHODS**: Using L-□-phosphatidylcholine, unilamellar (SUV) and mulilamellar (MLV) vesicles were prepared by ethanol injection and thin-lipid film hydration methods respectively. Hydroxyzine in Glaxal Base (o/w) was used as the control formulation. In a randomized, crossover study, 10 mg of hydroxyzine in each formulation were applied to the shaved backs of 6 female New Zealand rabbits. Intradermal tests with histamine phosphate (1mg/ml), and blood sampling were performed at pre-selected times up to 24 hrs, then the backs of the rabbits were wiped to determine the remaining medication. Wheal areas were traced after 10 min and calculated using Sigmascan software. Percent suppression compared to baseline was calculated. Plasma was analyzed for hydroxyzine using HPLC-UV. Data analyzed using PCSAS were considered significantly different at p□ 0.05**. RESULTS**: Compared to baseline hydroxyzine from all formulations, significantly suppressed histamine-induced wheal formation 75-95% for up to 24 hrs, maximum suppression 95 % for 3-6 hrs, with no difference between the products. Hydroxyzine plasma concentrations were significantly lower following the SUV, and MLV formulations compared to Glaxal Base. Only 0.02-0.06 % of the initial dose applied remained after 24 hrs. **CONCLUSIONS**: From the results in rabbits, topical hydroxyzine administration from SUV and MLV produces excellent peripheral H_1-antihistamine effects. The lower hydroxyzine concentrations in the systemic circulation, may indicate possible reduced CNS adverse effects.

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PS – 5

TOPICAL ADMINISTRATION OF CETIRIZINE FOR ALLERGIC SKIN DISORDERS USING LIPOSOMAL FORMULATIONS IN A RABBIT MODEL

Abeer AW. Elzainy[1], Xiaochen Gu[1], Estelle R. Simons[2], Keith J. Simons[1,2]
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PURPOSE: To measure the extent of cetirizine absorption and to assess the peripheral H_1-antihistamine activity from cetirizine liposome formulations applied to the skin of a rabbit model. **METHODS**: Using L-□-phosphatidylcholine, unilamellar (SUV) and mulilamellar (MLV) vesicles were prepared by ethanol injection and thin-lipid film hydration methods respectively. Cetirizine in Glaxal Base (GB) (o/w) was the control formulation. In a randomized, crossover study, 10 mg of cetirizine in each formulation were applied to the shaved backs of 6 female New Zealand rabbits. Intradermal tests with histamine phosphate (1mg/ml), and blood sampling were performed at pre-selected times up to 24 hrs, then the medication remaining on the back was determined. Wheal areas were traced after 10 min and calculated using Sigmascan software. Plasma was analyzed for cetirizine using HPLC-UV. Data analyzed using PCSAS were considered significantly different at p□ 0.05. **RESULTS**: Compared to baseline, histamine-induced wheal formation was suppressed by cetirizine in SUV and MLV for 0.5-24 hrs and in GB from 0.5-10 hrs. Cetirizine in MLV and in SUV was superior to GB from 2-8 hrs (67.8 ± 10.4 - 94.6±2.3 %) and from 6-8 hrs (90.6± 4.9 - 89±3.8 %) respectively. Cetirizine plasma concentrations from GB were higher than MLV and SUV from 0.5-2 hrs, but were lowest overall from SUV. Less than 3% of the initial dose remained after 24 hrs. **CONCLUSIONS:** From the results in rabbits, topical cetirizine administration from SUV and MLV produces excellent peripheral H_1-antihistamine effects. The lower cetirizine concentrations from SUV in the systemic circulation, may indicate minimal CNS adverse effects.

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PS – 6

EVALUATION OF THREE HYDROPHILIC METRIX POLYMERS FOR MODIFIED DRUG RELEASE OF ACRIVASTINE AND PSEUDOEPHEDRINE

Xiaochen Gu[1], Daryl J. Fediuk[1], Keith J. Simons[1], Estelle R. Simons[2], [1]Faculty of Pharmacy, [2]Department of Pediatrics and Child Health, University of Manitoba

PURPOSE: For treatment of allergic disorders, acrivastine (A) with pseudoephedrine (P) in Semprex®-D capsules requires four-time daily dosing. To reduce dosing to 1-2 times daily, we developed a modified release matrix tablet of A and P using three hydrophilic matrix polymers and evaluated its dissolution characteristics in vitro. **METHODS**: Various proportions of hydroxypropylmethylcellulose (Methocel®), glyceryl behenate (Compritol®) and poly(ethylene oxide) (Polyox®) were used alone or in combination for the formulations of matrix tablets. Dissolution profiles were evaluated using the USP Method I and compared to that of Semprex®-D capsules. Concentrations of A and P in dissolution samples were analyzed simultaneously using an HPLC method. **RESULTS**: Over 95 % of A and P content was released from Semprex®-D capsules within 30 minutes. Matrix tablets consisting 30 % Methocel® or Polyox® alone released 90 % of A and P within 210 minutes. The use of two polymers in combination significantly decreased the dissolution rate of A and P. A combination of Methocel®/Compritol® at 51 % of total tablet weight produced sustained drug release for over 8 hours. All formulas studied produced quality matrix tablets with satisfactory tabletting properties**. CONCLUSIONS**: It is possible to modify the release profiles of A and P in vitro by using combined hydrophilic matrix polymers Methocel®, Compritol® and Polyox®. Further studies are being conducted to determine the appropriate excipient proportions to achieve drug dissolution rate suitable for once or twice daily administration.

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PS – 7

EFFECTS OF QUERCETIN AND RUTIN ON LIPID PEROXIDATION INDUCED BY HYDROPHILIC AND LIPOPHILIC FREE RADICAL GENERATORS

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PURPOSE: Flavonoids have antioxidant properties which are believed to reduce the risk of cardiovascular disease. Quercetin ant its glycoside rutin are the bioflavonoids naturally occurring in buckwheat. In this study, we compared the antioxidant effects of quercetin ant rutin with vitamin E and vitamin C in lipoprotein of rabbits using the hydrophilic free radical generator AAPH (2,2' azobis (2-amidinopropane) dihydrochloride) and the lipophilic free radical generator AMVN (2,2'-azobis (2,4-dimethylvaleronitrile)). **METHODS:** The malondialdehyde content determined by the thiobarbituric acid reactive substances(TBA test) was used to detect the extent of lipid peroxidation. The conjugated diene assay was used to measure the early stage in the peroxidation process. **RESULTS**: Quercetin (IC_{50} = 4.1 □M) was more effective in inhibiting lipid peroxidation than vitamin E (IC_{50} = 5.8 □M), rutin (IC_{50} = 7.1 □M) and vitamin C (IC_{50} = 157.3 □M) in the hydrophilic free radical generating system AAPH. At the concentration range 0 – 30 uM, no protective effect against lipophilc free radical generator AMVN induced lipid peroxidation products except for vitamin E (IC_{50} = 16.0 □M). On the early stage of the lipid peroxidation induced by the hydrophilic free radical generator AAPH, quercetin (CLT_{50} = 0.5 □M) and rutin (CLT_{50} = 0.8 □M) produced greater increase in lag time than vitamin E (CLT_{50} = 3.4 □M). Vitamin C (CLT_{50} = 35.3 □M) showed the least increase in lag time. **CONCLUSION**: These findings suggest that quercetin and rutin could have potent antioxidant activities in the aqueous environment surrounding the low-density lipid.

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PS – 8

SYNTHESIS AND CHARACTERISATION OF NOVEL pH-SENSITIVE UNIMOLECULAR POLYMERIC MICELLES AS POTENTIAL CARRIERS FOR THE ORAL DELIVERY OF HYDROPHOBIC DRUGS.

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[1]Canada Research Chair in Drug Delivery, Faculté de Pharmacie, Université de Montréal, Montréal, QC H3C 3J7 [2]Labopharm Inc., 1208 Bergar, Laval, QC

Purpose: Novel pH-sensitive unimolecular polymeric micelles (UPM) were obtained by atom transfer radical polymerization (ATRP). These new polymers have a structure similar to that of polymeric micelles (PM) and were developed as a mean to circumvent stability problems associated with PM in infinitely diluted environments. **Methods:** Starting from a four-armed multi-functional initiator, amphiphilic star polymers were synthesized by sequential polymerization of hydrophobic ethylmethacrylate, tert-butylmethacrylate and hydrophilic poly(ethylene glycol) methacrylate. Cleavage of the tert-butylmethacrylate units introduces ionisable carboxylic functions into the micellar core, thus rendering the UPM sensitive to pH. **Results:** The obtained UPM were of small size (< 20 nm) with no signs of secondary aggregation. Fluorescence studies, using pyrene as a probe, showed that the polarity inside the core increases with pH due to the ionisation of the carboxylic functions. **Conclusion:** The developed polymers may serve as vehicles for the oral administration of poorly water-soluble drugs.

PS – 9

PRELIMINARY ASSESSMENT OF PERCUTANEOUS PENETRATION OF BENZOPHENONE-3 AND N,N-DIETHYL-M-TOLUAMIDE IN VITRO

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PURPOSE: Benzophenone-3 and N,N-diethyl-m-toluamide (DEET) are two essential components in newer commercial combined sunscreen/insect repellent products. Their characteristics in percutaneous absorption are mostly unknown. We carried out a series of preliminary in vitro studies to evaluate the percutaneous penetration and interaction of these two compounds. METHODS: In vitro diffusion studies were performed in Franz-style diffusion cells at 37 °C, using a phosphate buffer solution (pH 7.4, containing 4 % bovine serum albumin) and synthetic poly(dimethyl siloxane) (PDMS) membranes. Benzophenone-3 and DEET were applied separately or in combination (concentrations 1, 2.5, 5 and 10 mg/ml respectively), using propylene glycol as the vehicle, to the donor cells. Samples were collected hourly from the receptor cells for 6 hours. Concentrations of benzophenone-3 and DEET were analyzed simultaneously using an HPLC-UV method. RESULTS: In all diffusion studies benzophenone-3 and DEET penetrated across the PDMS membranes. Separately, the penetration rates for benzophenone-3 and DEET were 30-70 % and 35-70 % respectively. The rates increased with increased concentration of components in the donor cells. Using the combination, DEET was determined to increase the penetration of benzophenone-3 across the PDMS membranes by 35-49 %. CONCLUSION: The percutaneous penetration of benzophenone-3 was influenced by the presence of the insect repellent DEET. The potential interaction and consequent enhancement in percutaneous absorption of sunscreen chemicals and DEET in a combined sunscreen/insect repellent product requires further systematic evaluation.

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PS – 10

ANTISENSE EVIDENCE FOR NF-κB-MEDIATED SIGNAL TRANSDUCTION IN THE MECHANISM OF PHENYTOIN EMBRYOPATHIES.

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BACKGROUND: The nuclear transcription factor-kappa B (NF-κB) family regulates expression of many genes and plays a role in the pathogenesis of several diseases including cancer. NF-κB is activated by numerous stimuli and may be a downstream effector of reactive oxygen species (ROS)-mediated signal transduction. Teratogens like the anticonvulsant drug phenytoin enhance embryonic ROS formation, and embryopathies may result from oxidative damage to cellular macromolecules, and/or enhanced ROS-mediated signaling.

METHODS: To determine the toxicological role of ROS-mediated NF-κB activation, embryos were cultured with either a therapeutic concentration of phenytoin (20 μg/ml, 80 μM) or its vehicle (0.002N NaOH), with or without antisense NF-κB (p65) (2.5-25 μM).

RESULTS: Gestational day 9.5 CD-1 embryos incubated with phenytoin showed decreases in anterior neuropore closure, turning, yolk sac diameter, crown rump length and somite development ($p<0.05$). Addition of antisense NF-κB to the culture medium decreased the embryotoxic effects of phenytoin on anterior neuropore closure, turning and somite development ($p<0.05$), but did not protect against decreases in yolk sac diameter and crown rump length. The protective effects were not observed using sense or nonsense controls, or antisense vehicle. This was corroborated using transgenic mice engineered to express NF-κB-dependent β-galactosidase in which phenytoin caused NF-κB activation in embryonic target tissues.

CONCLUSIONS: These results suggest that NF-κB-mediated signal transduction may play a role in the mechanism of phenytoin embryopathies. This novel study may provide new insights into risk factors and therapeutic interventions and may contribute in the development of drug products designed for pregnant women with epilepsy. (Support: CIHR)

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PS - 11

PHARMACOGENETICS OF CODEINE BIOACTIVATION IN PEDIATRIC DENTAL PATIENTS: DEVELOPMENT OF A REAL-TIME, RAPID-CYCLE METHOD FOR CYP2D6*10 GENOTYPING

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PURPOSE: Codeine is bioactivated to morphine by cytochrome P450 2D6 (CYP2D6). The CYP2D6*10 allele is very common among Asians, and appears to be associated with decreased enzyme function. The purpose of our initial project is to develop a real-time, rapid-cycle polymerase chain reaction (PCR) method for CYP2D6*10 genotyping.

METHODS: To accurately genotype CYP2D6*10 (C188→T), we need to rule out CYP2D6*5 (gene deletion) and CYP2D6*4 (C188→T, G1934→A), and to determine the presence of either CYP2D6*1 or CYP2D6*2 (C188). Fluorescent hybridization probes and two different primer sets (F1/R1 and P11/P12) for the CYP2D6*10 locus were synthesized. The C188→T single nucleotide polymorphism (SNP) was analyzed with the Lightcycler™. The results were then validated with PCR restriction fragment length polymorphism (PCR-RFLP) analysis using the restriction enzyme *Hph*I.

RESULTS: Rapid-cycle PCR and melting curve results for CYP2D6*10 with F1/R1 primers were inconsistent. Although consistent results were obtained with the P11/P12 primers, these primers also amplified the CYP2D7BP pseudogene. Thus, we conducted experiments with the P11/R1 primers (R1 is specific for CYP2D6). The initial rapid-cycle PCR and melting curve results showed good reproducibility and specificity for CYP2D6, with a single peak at 68°C. Subsequent PCR-RFLP analysis results were in agreement with the melting curve analysis.

CONCLUSIONS: The CYP2D6*10 C188→T SNP can be detected by real-time, rapid-cycle PCR. Our novel approach for genotyping CYP2D6*10 in patient samples will involve initial analysis for the CYP2D6*5 gene deletion by long chain PCR, followed by subsequent analysis for the CYP2D6*10, CYP2D6*4, CYP2D6*1, and CYP2D6*2 alleles by real-time, rapid-cycle PCR.

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PS – 12

ULTRASENSITIVE IMMUNOASSAY FOR THE DETECTION OF THE WALKERTON PATHOGEN ESCHERICHIA COLI O157

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Escherichia coli (*E. coli*) O157 has been linked to a spectrum of health disorders. The outbreaks of *E. coli* O157 infection associated with a treated municipal water supply in Walkerton, Canada, have highlighted the threat and concerns related to this pathogen and public health. Since the infectious dose of *E. coli* O157 is estimated to be very low, highly sensitive detection system is needed for the efficient detection to prevent infection. Homosandwich molecular velcro ELISA using monoclonal antibodies may be a potential tool to develop specific and sensitive detection of *E. coli* O157. This simple strategy provides cost and time effective advantages. Therefore, this study was aimed at the development of ultrasensitive immunoassay that can detect very low number of *E. coli* O157 for potential application in public health area.

Anti- *E. coli* O157 monoclonal antibodies (MAb) specific to lipopolysaccharide (LPS) were produced from 13B3 hybridoma ascites by Protein G affinity chromatography. The 13B3 MAb was biotinylated to be used as a tracer. Homosandwich ELISA using colorimetric (TMB), chemiluminescent (Super Signal Femto™, Super Signal Pico™) and fluorogenic (QuantaBlu™) substrates were performed to detect *E. coli* O157:H-. Conventional ELISA using colorimetric substrate could detect 16 bacterial cells/well in a 100 µl ELISA. The sensitivity of chemiluminescent ELISA using Femto and Pico substrate were 8 cells/well in both assays. In fluorescent ELISA, 32 cells/well could be detected. Chemiluminescent ELISA showed the highest sensitivity of detecting 8 bacterial cells/well in 100 µl ELISA. Such ultrasensitive homosandwich ELISA using purified 13B3 MAb and biotinylated 13B3 MAb could be a superior method to detect *E. coli* O157 for public health applications in water, food and human sample testing. Adaptation of the above assay strategy to unitized disposable formats for farm use as well as on line testing for waste/running water are in progress.

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PS - 13

EXPRESSION ANALYSIS OF HOXA2 GENE DURING OLIGODENDROGENESIS

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An insulating sheath, myelin, surrounds the motor neuron axon and allows information to be transmitted along it at a faster rate. The myelin sheath is produced and maintained by cells known as oligodendrocytes (OGs). The development of OGs involve multiple stages, each characterized by several markers. One marker that appears to be expressed in developing OGs is the transcription factor Hoxa2.

PURPOSE: The objective of this study is to determine the expression pattern of Hoxa2 gene in relation to OG development.

METHODS: In order to accomplish this objective experiments have been conducted utilizing immunohistochemical techniques to show the expression of various OG markers, including Hoxa2. These experiments were conducted in both cultures obtained from the cerebral hemispheres of newborn mice as well as spinal cord sections obtained from mice of embryonic ages 11 to 18.

RESULTS: Results indicate that Hoxa2 gene is expressed at all stages of OG development. Its expression is co-localized with both early as well as later markers of oligodendrogenesis**.**

CONCLUSIONS: Our findings show that Hoxa2 is expressed throughout OG development and hence may play some role in this process. Research is in progress to further evaluate the role of Hoxa2 in OG development. This research, through furthering our understanding of OG development, could lead to new treatments for multiple sclerosis.

(Supported by grants from CIHR and the Multiple Sclerosis Society of Canada)

PS – 14

Effect of Modulation of Liver Fatty Acid Binding Protein Levels on Hepatocyte Mitotic Activity

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PURPOSE: Liver fatty acid binding protein (L-FABP) is involved in many intracellular functions including cellular mitogenesis. We investigated the role of L-FABP in the modulation of hepatocellular growth and differentiation, hypothesizing that L-FABP levels affect hepatocyte mitotic activity. METHODS: L-FABP expressing 1548-mouse hepatoma cells were treated with dexamethasone (0.5 □M) and clofibric acid (500 □M) for 4 days to downregulate and upregulate L-FABP expression, respectively. Treatment with alpha-bromo palmitate (600 □M) inactivated L-FABP by irreversibly binding to the protein. Western blot analysis was used to monitor L-FABP levels. [^{3}H]-Palmitate clearance studies were performed using monolayer cultures and data presented as mean ± SEM with statistical significance set at $p<0.05$. RESULTS: Palmitate clearance in dexamethasone and alpha-bromopalmitate treated cells was significantly less (50%) than control ($p<0.05$), while clofibrate treatment moderately increased the clearance. Dexamethasone treatment diminished hepatocytes growth rate by 51%. Clofibrate treatment did not significantly enhance growth rate. Treatment with alpha-bromopalmitate was associated with cell apoptosis within 4 hours of treatment. CONCLUSION: Intracellular L-FABP level is associated with the induction of hepatocellular mitogenesis. This may be due to availability of long-chain fatty acids, which increased with increased L-FABP content. We speculate that L-FABP is an important intracellular protein involved in hepatocyte multiplication and in the process of oncogenesis.

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PS - 15

EFFECT OF IONIZATION ON PENETRATION OF IBUPROFEN THROUGH POLYDIMETHYLSILOXANE MEMBRANE

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PURPOSE: The purpose of the present study was to investigate the influence of pH and ionization on penetration of ibuprofen and its sodium salt across polydimehtyl siloxane [PDMS] membrane. **METHODS:** Solubility of ibuprofen sodium was determined at a range of pH values. Franz cells were used to study the permeation of ibuprofen from saturated solutions at different pH values. The apparent partition coefficient of ibuprofen sodium between n-octanol and phosphate buffer at different pH values was investigated**. RESULTS:** As expected, with increases in pH and degree of ionization, aqueous solubility increases. Diffusion studies with ibuprofen sodium at different pH values 4.0, 5.0, 6.0, 7.0 and 8.0 indicated that ibuprofen flux increased significantly with increase in pH from 4.0 to 7.0. Above pH 7.0 a decrease in diffusion was observed. The permeability coefficients of ibuprofen and its sodium salt were directly related to the degree of ionization, and were found to increase with the increase in the amount of unionized acid. The flux observed with the sodium salt was significantly greater than the parent acid. The octanol/water partition coefficient was directly related to the permeability coefficient, being higher at lower pH. **CONCLUSIONS:** Introduction of sodium significantly increased the solubility. As saturated solutions were used the membrane flux of ibuprofen also increased. We suggest that the maximum flux that can be achieved for ibuprofen was at higher pH values due to increased solubility and hence available concentration for diffusion. The lower inherent permeability of the ionized species at higher pH values was more than compensated for by increased solubility thereby resulting in increased flux**.**

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PS - 16

INFECTION OF RAT MYOCYTES WITH *CHLAMYDIAE*

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PURPOSE: Chlamydia infection has been associated with various forms of myocarditis in both animals and humans. However, the mechanisms on how chlamydial infection causes myocarditis is not known. In this study, we hypothesized that both *C. trachomatis* and *C. pneumoniae* organisms can infect and replicate in myocytes isolated from neonate rats, resulting in cardiac myocytes damage. **METHODS**: The *C. trachomatis* LGV2 (L2) and *C. pneumoniae* AR39 strains were used to infect neonate myocytes. Chlamydial infection was detected with an immunofluorescence staining assay and electron microscopic observation. The potential damage of chlamydial infection on myocytes was evaluated by LDH release and ATP level assay. The intracellular oxidative stress in cardiomyocytes was assessed using the fluorescent indicator-Dichlorofluorescein (DCF). **RESULTS**: The infected myocytes contained chlamydial inclusions, and the infectious particles were recoverable from the infected myocytes. A significant increase ($p<0.05$) in LDH release was found in myocytes12 hours after infection. The total ATP levels were dramatically lower at 30 hours after infection with L2 and 48 hours after infection with AR39. There was 1.5 to 3 fold increase ($p<0.05$) in oxidative species in the infected cell samples than the uninfected samples. No nuclear apoptosis was detected. **CONCLUSION**: Chlamydia was able to productively infect myocytes. This infection caused significant damage to the infected cells. Collectively, our results provided important information for understanding the mechanisms of chlamydia-induced myocarditis.

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POSTER PRESENTATIONS – PHARMACY EDUCATION

PE – 1

THE NEW PHARM.D. CURRICULUM AT THE UNIVERSITY OF COLORADO SCHOOL OF PHARMACY

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Purpose: To design and implement a new innovative, progressive four-year entry-level Doctor of Pharmacy degree program at the University of Colorado School of Pharmacy.

Methods: The Curriculum Committee gathered information from other entry-level Pharm.D. programs, consulted with Colorado practitioners and with faculty members from other schools, attended workshops and conferences and held faculty retreats and workshops to assist in the task of designing a new curriculum. The new curriculum was initiated in 1999 and its implementation and development remains an ongoing process.

Results: The main features of the new curriculum are: abilities-based, integration, active learning and introductory and advanced pharmacy practice experiences. These characteristics conform to the national direction in pharmacy education and were promoted and endorsed by the faculty early in the design process. The result is a curriculum incorporating both vertical and horizontal integration of disciplines and subject areas, e.g., Integrated Organ Systems courses integrate pathophysiology, pharmacology and therapeutics for each major organ system. The core of the curriculum is the Professional Skills Development course sequence that integrates material in concurrent courses while developing practice-based skills. The capstone course, Comprehensive Patient Care, requires students to synthesize, integrate and apply their knowledge and skills to resolve complex patient care cases. Introductory and advanced pharmacy practice experiences require students to utilize knowledge and skills acquired throughout the program in patient care activities.

Conclusions: The new Pharm.D curriculum has met with satisfaction by students, the faculty and the ACPE accrediting body and has garnered several education awards.

**Current and former faculty members of the Curriculum Committee: Ralph Altiere, Carlos Catalano, Tom Cyr, Doug Fish, Dana Hammer, Laura Hansen, Cathy Jarvis, David Kroll, Paul Langely, Dan Malone, Marianne McCollum, Chris Paap, Susan Paulsen, Joe Saseen, David Thompson, Chris Turner*

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PE – 2

DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF A PRECEPTOR EDUCATIONAL PROGRAM FOR A STRUCTURED PRACTICAL EXPERIENCE PROGRAM.

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PURPOSE: To describe the development, implementation and evaluation of a Teaching Associate Educational Program (TAEP) to provide standardized education for pharmacist preceptors (Teaching Associates) assigned students in the final year Structured Practical Experience Program (SPEP).

METHODS: An educational program based on students' SPEP learning objectives was designed for preceptors, with input from a panel of practitioners and managers. The program was piloted in 1996 and fully implemented in 1997 in preparation for 258 rotations in 1998. Major goals of TAEP are 1) to enable preceptors to enhance their practices based on the pharmaceutical care model taught in the Faculty's curriculum and 2) to provide knowledge and skills required for teaching and assessing student performance. A series of 4 sessions, each 1.5 - 2 days in length, was designed and delivered to address over 75 learning objectives. Teaching methods included: didactic and audiovisual presentations, interactive discussions, role-playing, and take home assignments. Sessions and rotations were evaluated and results compiled and analyzed.

RESULTS: Over 200 pharmacists completed the 1997 program. All agreed with the statement, 'TAEP has assisted me to meet the stated learning objectives'. Ninety-nine percent stated their TAEP-related expectations were 'Met' or 'Exceeded'. Eighty-nine percent of attendees agreed that they were well prepared to take students after completing the program. Post rotation student surveys indicated consistently high ratings of preceptors' teaching skills and learning environments.

CONCLUSIONS: TAEP met its goals in 1997 and annually since then. A standardized preceptor education program is recommended

PE – 3

DEVELOPMENT AND IMPLEMENTATION OF A RECRUITMENT STRATEGY FOR THE DALHOUSIE COLLEGE OF PHARMACY

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OBJECTIVES: In the late 1990's the number of applications to pharmacy faculties across Canada was declining at a time when increased enrolments were initiated to address a nationwide shortage of pharmacists. The Dalhousie College of Pharmacy's goal was to increase the number of qualified, interested applicants to the pharmacy program.
METHODS: In the fall of 2000, the Admissions Committee undertook a critical review of recruitment tools and plans and solicited the input of various stakeholders. In 2001 a new recruitment strategy was implemented. Recruitment tools including a television ad, presentations at feeder universities, an information brochure and an "applicant friendly" website were key components. Applicants invited to the College in 2001 for an interview were asked to evaluate the new recruitment tools/methods.
RESULTS: Together with current students of the College, who played an integral role in recruitment planning and implementation, the College of Pharmacy significantly increased awareness of the profession and the application process for the pharmacy program. The College Website, information brochure and talking to a current student were cited as the most useful tools/methods of obtaining information about the College.
CONCLUSIONS: The number of applicants to the College of Pharmacy in 2001 rose dramatically (almost 200%!!). Information obtained from the 2001 applicants was used to further enhance the recruitment strategy in 2002 with application increasing by approximately 30% again this year.

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PE – 4

DEVELOPMENT OF A CRITICALLY EVALUATED, DISEASE-BASED HERBAL MEDICINE GUIDE FOR PHARMACISTS: GYNECOLOGICAL DISORDERS.

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Objectives: With significant numbers of patients using herbal medicines, pharmacists need quality information to help answer patients' questions regarding the safety and efficacy of these products. The primary objective of this project was to produce a resource for pharmacists that would provide reliable information for use when counseling patients regarding the use of herbal medicines in women's health.
Methods: A list of herbal medicines most commonly used for gynecological conditions was compiled by reviewing teritiary herbal references and websites. Databases were searched to identify clinical trials of these herbal medicines in dysmenorrhea, premenstrual syndrome, menopause and vaginitis. Each trial was critically assessed using two methods and results compared. The format of the guide for pharmacists was drafted and refined using feedback from pharmacists.
Results: Eighteen clinical trials were critically assessed using two methods. Levels of evidence assigned by each method differed as a result of different emphasis on particular criteria. Neither method considered the importance of product content. A preliminary format for the disease-based herbal medicine guide was developed with feedback from pharmacists.
Conclusions: Despite the amount of publicity surrounding the use of herbal medicines in gynecological conditions, relatively few well controlled clinical trials have been published which support their use. The two methods used in evaluating these trials were not adequate for assessing the level of evidence produced by clinical trials of herbal medicines.

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PE – 5

DEVELOPMENT AND IMPLEMENTATION OF CROSS-DISCIPLINARY CASE-BASED PROBLEMS USING THE FACULTY OF PHARMACEUTICAL SCIENCES' WEB-BASED LEARNING CENTRE (WBLC).

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PURPOSE To develop an online case-based problem linking courses within the WBLC to establish an interdisciplinary approach to teaching and learning.

METHODS Project steps: 1) Identifying challenging learning needs: faculty experts and students met to determine knowledge and skill sets that were difficult to teach and/or to learn. 2) Development of the case-based problem: utilizing the step 1 learning needs, patient-centred, cross-disciplinary, case-based problems were developed through iterative brain-storming sessions. 3) Implementation: The case-based problem along with a student evaluation survey was integrated into the course outline of a second year pharmaceutics course. 4) Web-implementation: the case was posted weekly in stages with hypertext linking to appropriate WBLC and external content, and bulletin board fora set-up for facilitated group discussions, collecting student submissions for expert analysis and grading.

RESULTS An online cross-disciplinary case-based problem involving the use of risperidone in schizophrenia therapy was implemented in Pharmacy 311 (P311: Drug Delivery Systems II). The case, accessed through the P311 WBLC course, focused on depot formulation development but included discipline specific content outside the scope of P311 (drug analysis, antipsychotic pharmacology and therapeutics, and patient counselling). Hypertext links to other WBLC courses and external sources provided the additional discipline specific information. Preliminary student survey results (N=125) indicate comfort with the online delivery method (69.6% agree/8% disagree) but were mixed as to the flexibility offered by online learning (46.4% agree/38.4% disagree). 36.8% of students gained an appreciation of the connections between pharmacy disciplines (21.6% did not), and overall, the learning activity was rated as "fair". Confounding factors included student time-constraints and workload.

CONCLUSIONS An online, cross-disciplinary case-based problem was created with potential to establish an interdisciplinary approach to teaching and learning. Student response to the learning activity varied.

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PE - 6

CHOICE PROGRESS EXAMINATION: COMPARISON OF TRADITIONAL AND PBL-BASED CURRICULA: INTERIM ANALYSIS

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OBJECTIVES: In 1997/98 the College of Pharmacy at Dalhousie University implemented a unique, integrated problem-based learning (PBL) curriculum for a four year undergraduate pharmacy program. Several methods are being used to compare the PBL-based curriculum to the previous lecture-based curriculum. This 5-year project was designed to determine if knowledge learned by the students in the two curricula is equivalent.

METHODS: A bank of multiple choice questions was developed including questions from the biomedical and pharmaceutical sciences and all other pharmacy disciplines. This bank is enhanced each year. A single 100-item examination is administered simultaneously each spring to all students in the undergraduate program. Results are compared using ANOVA. The project received ethical approval in 1998.

RESULTS: Data collected to date, from the classes of 1998-2001, includes students from the lecture-based and PBL-based curricula. Interim analysis suggests that students progress in overall knowledge as they proceed through the curriculum and retention of knowledge appears to be at least partially related to the year in which the knowledge is learned in the curriculum. No consistent differences in performance could be detected between students in the PBL and traditional curricula.

CONCLUSIONS: Results of the multiple-choice progress examination suggest that there is no consistent difference in the knowledge learned by students in the PBL-based curriculum and the previous lecture-based curriculum.

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PE – 7

The Evaluation Profile for the Faculty of Pharmaceutical Science's Web-Based Learning Centre (WBLC).

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Purpose: To evaluate the long-term sustainability of the WBLC as an educational tool in the undergraduate pharmacy program through the development of a comprehensive evaluation profile.
Methods: Evaluation profile development was based upon a literature investigation as well as consultations with external agencies such as Distance Education and Technology. An iterative process of design, evaluation, and redesign through a series of intensive brainstorming sessions was used to define "long-term sustainability of the WBLC" in terms of major evaluation concepts. Major concepts were defined using a hierarchy of primary, secondary, and tertiary descriptive elements. A master flow chart containing a tree-structure of sub-charts was created to define "long-term sustainability of the WBLC" and the interrelationship between the major evaluation concepts and their primary, secondary, and tertiary descriptive elements.
Results: A 41-page evaluation profile defining the long-term sustainability of the WBLC was created and includes the development process as well as a master flow chart. The flow chart illustrates long-term sustainability in terms of two major evaluation concepts: effectiveness and cost/benefit analysis. Major concepts were defined by several primary element sub-charts:

Effectiveness:	**Cost/Benefit Analysis:**
Chart A – Quality of Interface	Chart H – Development Costs
Chart B – Access/Barriers to Access	Chart I – Faculty Costs
Chart C – User Perceptions	Chart J – Student Costs
Chart D – Organization	Chart K – Faculty Benefits
Chart E – Clarity	Chart L – Student Benefits
Chart F – Aesthetics	

Secondary and tertiary descriptive elements further defined each primary element setting the framework for the development of specific evaluation tools.
Conclusions: An evaluation profile for the WBLC was completed. The long-term sustainability of the WBLC was defined through major concepts and a series of primary, secondary and tertiary descriptive elements. The profile provides a framework for development of specific evaluation tools to measure the effectiveness, costs and benefits of the WBLC for supporting a learning-centred approach to pharmacy education.

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PE - 8

INTRODUCTORY EXPERIENTIAL COURSES IN AN ENTRY-LEVEL PHARM.D. PROGRAM

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Objective: design and integrate introductory experiential courses in a new entry-level Pharm.D. program.
Methods: internal and external working groups advised the school on the philosophy and practical aspects of introductory pharmacy practice experiential training. A philosophy was established that students should be required to demonstrate increasing mastery of the general and professional competencies required to practice pharmacy, and to contribute to patient care. Six courses were designed in keeping with that philosophy and with the practical aspects of operating half-day per week experiential courses in the metropolitan Denver area.
Results: one course per semester for the first six semesters (3 years) of the program was created. The first was designed to introduce students to the professional and general competencies required for pharmacy practice. Subsequent courses were designed to allow students to show increasing mastery of these competencies. The assessment of students in all courses was ability-based: students were required to demonstrate levels of competency appropriate to each course and year of the program. The courses employed community and hospital pharmacies, elementary schools and physician and nurse practitioner offices.
Conclusions: six introductory experiential courses that require students to demonstrate increasing mastery of the professional and general pharmacy practice competencies, and to contribute to patient care, have been designed and successfully implemented.

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PE – 9

REVISION OF DALHOUSIE COLLEGE OF PHARMACY ADMISSIONS REQUIREMENTS, POLICIES AND PROCEDURES

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OBJECTIVES: In 1997/98 the Dalhousie College of Pharmacy implemented a problem-based learning curriculum. In light of the new method of student learning in this curriculum, the changes in the profession of pharmacy and the overall shortage of pharmacists in the workforce, we undertook a critical review and revision of our admissions process. We wished to ensure that we were admitting students with the knowledge, skills and abilities to successfully complete the pharmacy program and become competent, committed pharmacists.
METHODS: A thorough review of the admissions requirements, policies and procedures was initiated in 1999. Literature searches and reviews of Canadian faculties of pharmacy admissions requirements were conducted, and stakeholders surveyed via focus groups and questionnaires. An Admissions Leadership Taskforce aided with making recommendations.
RESULTS: Lists of desired academic and non-academic criteria were developed forming the basis for change to the admission process. Relative weighting of academic versus non-academic criteria in determining admission changed. The Pharmacy College Admissions Test was deleted as a requirement, prerequisite course requirements changed and customized behavioral interviews and questionnaires developed.
CONCLUSIONS: The new admissions process was used for the first time in 2001. Informal feedback and student performance to date suggests that the revised admissions process was successful in identifying students with the desired knowledge, skills and abilities.

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PE – 10

EDUCATIONAL EXPERIENCE AND PREPARATION FOR PROFESSIONAL PRACTICE: A SURVEY OF GRADUATING STUDENTS AND GRADUATES: INTERIM ANALYSIS

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OBJECTIVES: In 1997/98 the Dalhousie College of Pharmacy implemented an integrated problem-based (PBL) curriculum designed around desired educational outcomes. Several methods are being used to compare the PBL-based curriculum to the previous lecture-based curriculum. This project compares the graduates' perception of the curriculum and how well it prepared them for practice at the time of graduation and one year later.
METHODS: A 24-item questionnaire covering demographics, College experience, pharmacy practice experience and educational preparation was designed. Graduates are asked to rank how well they felt Dalhousie prepared them to perform the 50 competencies comprising the educational outcomes. The questionnaire was administered to the students (in the Class of 1998-2001) at the time of graduation and was mailed to the graduates of the Classes of 1998-2000 one year after graduation. Results were compared using chi-square, ANOVA and independent t-tests. Ethical approval was received in 1998.
RESULTS: Interim analysis shows students in the Class of 2001 (PBL curriculum) perceive themselves to be better prepared for practice in 16 competencies than did the students of the lecture-based curriculum. No other statistically significant differences were consistently found between the PBL class and the three previous classes.
CONCLUSIONS: Interim results of the survey of graduating students and graduates indicate students of the PBL curriculum perceive themselves to be as well prepared and, in some competencies, better prepared for practice than students graduating from the lecture-based curriculum.

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POSTER PRESENTATIONS – PHARMACY PRACTICE

PP – 1

EVALUATION OF EFFICACY AND SAFETY OF THE COMBINATION OF ONDANSETRON, DEXAMETHASONE AND PROCHLORPERAZINE IN THE PREVENTION OF NAUSEA AND VOMITING CAUSED BY CHEMOTHERAPY FOR PATIENTS WITH BREAST CANCER.

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PURPOSE: This descriptive study evaluates the efficacy and safety of the standard protocol (ondansetron-dexamethasone-prochlorperazine) used since October 1998 in the prevention of nausea and vomiting in patients receiving chemotherapy for breast cancer**.**

METHODS: Data from 198 breast cancer patients (mean age, 56 years) having received chemotherapy (CMF, AC, EC, FAC, FEC) and having completed a home evaluations diary of post chemotherapy emesis after each treatment (adaptation of the Morrow Assessment of Nausea and Emesis) was used for analysis. 129 patients received the standard protocol (prior to chemotherapy: ondansetron 8 mg PO + dexamethasone 10 mg IV and after the treatment: dexamethasone in decreasing doses + prochlorperazine) and 69 patients received the standard protocol and an additional dose of ondansetron (modified protocol) after the first cycle.

RESULTS: After the first cycle, 92% of patients treated with the standard protocol had no vomiting in the first 24 hours vs 88% of patients who received the modified protocol. In the delayed phase, 89% had no vomiting with the standard protocol and 91% of patients with the modified protocol. Ten patients who received the standard protocol after the first cycle had to add a supplementary dose of ondansetron after the second cycle and six patients improved their response. 51 patients suffered of insomnia and 27 patients demonstrated excitability after the first cycle. 38 patients out of 57 required a change in the protocol because of adverse events. 33 patients had a reduction of the dose of dexamethasone and 5 patients who presented with extrapyramidal reactions were switched from prochlorperazine to dimenhydrinate.

CONCLUSION: The standard protocol is effective and safe. According to the results, the oncology team (doctors, pharmacists and nurses) decided to reduce the dosage of dexamethasone to improve the quality of life and sleep for patients with breast cancer.

This project was supported by Apotex-P.A.C.E. undergraduate pharmacy practice research award.

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PP – 2

THE IMPACT OF A CLINICAL PHARMACIST ON PATIENT AND ECONOMIC OUTCOMES ON THE CHILD AND ADOLESCENT MENTAL HEALTH UNIT AT THE IWK HEALTH CENTRE.

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BACKGROUND It has been shown that clinical pharmacists positively impact quality of care and decrease drug expenditures in hospital settings. To date, no studies have evaluated the role of a pharmacist in a pediatric mental health population. This study investigated the impact of a 0.4 FTE clinical pharmacy position on a child and adolescent mental health unit.

PURPOSE To evaluate the impact of a clinical pharmacist on patient and economic outcomes in a pediatric mental health population.

METHODS The outcomes of this study were measured in 2 parts. First, during a 4-week prospective evaluation period, pharmacist-initiated interventions were documented and distributed to a panel of assessors to determine the impact of each intervention on patient care. Secondly, a retrospective cost analysis compared drug costs for the year prior to and post implementation of the clinical pharmacy position. A matched pair t test and a regression analysis were conducted on the cost data.

RESULTS The pharmacist initiated 48 interventions during the 4-week period, 98% of which were accepted by the physician. Eighty six percent of the interventions were assessed as having a positive effect on patient care. Total drug cost per patient day decreased by 14% in the year post implementation of the pharmacy position, with a statistically significant decrease seen in the last eight months ($p = 0.0019$). Total drug costs decreased by 21%, translating into a cost savings of $5,485.80.

CONCLUSION The clinical pharmacist had a positive impact on both clinical and economic outcomes in a pediatric mental health population.

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PP – 3

SECONDARY PREVENTION OF CORONARY ARTERY DISEASE (CAD): ANTIPLATELET UTILIZATION IN A COMMUNITY PHARMACY.

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BACKGROUND: The use of nitrate products has been found to be a strong predictor of the presence of CAD. ASA, a relatively benign medication has been conclusively proven to reduce cardiovascular events in these patients. The rate of antiplatelet utilization among Non Insured Health Benefits, Veterans Affairs Canada and Department of National Defence clients with CAD is approximately 58%. This analysis was based on a large reimbursement database. Limitations of this study included the inability to diagnose ischemic heart disease, the purchase of ASA out-of-pocket, and the inability to determine contraindications to antiplatelet therapy using information from the prescription database.

PURPOSE: To compare the utilization of antiplatelet therapy for the secondary prevention of cardiovascular disease from three reimbursement data bases with data from the community.

METHODS: 1) Patients were identified as having CAD if they had a prescription for a nitrate product over a 12 month period from January 1 2001 to December 31 2001. 2) A list of all drug identification numbers for nitrate products were obtained. 3) Using these numbers, a list of all patients on nitrates were obtained. 4) The profiles of all patients prescribed nitrates were reviewed to determine the use of antiplatelet agents (January 1 2001 to December 31 2001).

RESULTS: This retrospective audit identified 108 patients that had a prescription for a nitrate product recorded on their profile. The rate of antiplatelet utilization was low. Fifty-two patients (48%) did not have evidence of a prescription for an antiplatelet agent. Fifty-six (52%) patients had a record of at least one prescription for an antiplatelet agent. This data is consistent with the data derived from the reimbursement data base.

IMPLICATIONS; There is an opportunity for Pharmacists to improve antiplatelet utilization among patients with CAD. Nitrate prescriptions can be used as a positive predictive value for Pharmacists to identify patients with CHD. Pharmacists can intervene on behalf of patients to increase the prescribing of proven pharmacotherapy (antiplatelet agents) for CAD. Once they have been prescribed, the pharmacist can verify with the patient at each nitrate refill that the patient is compliant with their use of antiplatelet agents

PP – 4

THE IMPACT OF TREATMENT WITH ANTIDEPRESSANT (AD) DRUG THERAPY ON THE UTILIZATION OF PROTON PUMP INHIBITORS (PPI) OR HISTAMINE 2 ANTAGONISTS (H2)

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Rationale: AD drug therapy has been reported to increase the risk of gastrointestinal (GI) bleeding and is associated with dyspepsia

Objective: to determine if the rate of PPI and H2 use increases following AD drug therapy in ambulatory care patients

Methods: Subjects prescribed an AD drug between July 1st and December 31st, 2000 were included for analysis. Records were obtained from the computer system of 7 military pharmacies. Subjects were classified to PPI or H2 use prior to, or post AD drug therapy. AD were further classified as to their serotonin uptake inhibition on platelets: tricyclics (amitryptiline, imipramine), SSRI's (citalopram, fluoxetine, fluvoxamine, nefazodone, paroxetine, sertraline, and trazodone) and others (bupropion, desipramine, nortryptiline and trimipramine). Patients were further stratified by long-term non-steroidal anti-inflammatory drug (NSAID) use, defined as ≥ 4 weeks.

Results: 1609 patient profiles were reviewed; 70.3% were male with average age being 37.2±6.9 years. PPI and/or H2 utilization was 12.4% prior to AD therapy, this increased to 23.3% post therapy ($p<0.001$). PPI or H2 use increased from 13.7% to 29.0% in 1289 patients on SSRI therapy ($p<0.001$), 17.1% to 27.9% in 269 patients on TCA therapy ($p<0.05$) but did not increase significantly in 25 patients on other drugs (12.0% to 28.3%, $p=0.33$). The presence of long-term NSAID use in 148 patients increased the utilization of PPI's or H2 blockers over that of AD alone ($p<0.01$). Over 40% of the patients were on PPI or H2 blockers within 6 months of starting AD drug therapy.

Conclusions: AD utilization appears to have an impact on PPI and H2 prescribing.

PP – 5

ANTIDEPRESSANT DRUG UTILIZATION: DRUG USE PATTERNS, CHRONIC MEDICAL CONDITIONS AND CONCURRENT DRUG USE IN THE CANADIAN FORCES

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Purpose: To assess prevalence of chronic medical conditions and determine concurrent drug use for patients receiving antidepressant drug (AD) therapy on 7 Canadian Force Bases

Methods: Patients were included if they received any AD medications between July 1st and Dec 31st 2000. Exclusions were: patients receiving bupropion brand for smoking cessation, personnel deployed or unavailable and CF medical professionals. Charts were reviewed for demographics, indication and chronic medical conditions. AD use was examined for duration of therapy during the study period, proportion of patients who switched AD drugs and concurrent drug use.

Results: Of 1609 patients receiving AD drugs, 587 patients were excluded leaving 1024 patients for analysis. A chronic medical condition was diagnosed in 667 patients (65.1%), of which chronic pain or a migraine diagnosis was the most common condition. Patients with a chronic medical condition were more likely to receive AD drugs for depression ($p<0.001$) or for a non-psychiatric indication ($p<.001$) but not for an anxiety indication including PTSD (p=NS) compared to patients without a chronic medical condition. Concomitant CNS drug use was common; 466 (45.5%) were receiving sedatives, 77 (7.5 %) were receiving antiepileptics and 16 (1.6 %) were receiving mood stabilizers. Drugs reported to be a probable or possible cause of depression was dispensed to 105 (10.3%) patients. There were 228 patients new users of SSRI therapy during the study period, of which 67 (29.4%) were either switched to another SSRI or buproprion was added. The mean duration of therapy before switching was 5.5±4.9 weeks.

Conclusions: Patients receiving AD in the CF are commonly prescribed other psychiatric medications and have a high rate of chronic medical conditions or drugs associated with depression. Treatment with SSRI medications demonstrates efficacy and response times compatible with the literature

PP – 6

Secondary Prevention of Coronary Artery Disease: Antiplatelet Utilization

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Background: Antiplatelets have an established role in the secondary prevention of coronary artery disease. Little data exists on a national basis in Canada regarding the utilization of antiplatelets. An analysis of federal drug reimbursement databases of Aboriginal clients and retired members of the Canadian Forces using nitrate therapy as a marker for ischemic heart disease (IHD), provides a unique opportunity to determine the rate of antiplatelet use in these populations, as well as factors predicting the probability of antiplatelet prescribing.

Methods: Longitudinal retrospective data of client-specific prescription records over the period January to June 2000 of federal drug reimbursement programs was analyzed: Veterans Affairs Canada (VAC) representing retired military members and Non-Insured Health Benefits (NIHB) representing status Aboriginal peoples. Clients who were dispensed at least 1 prescription for any nitrate product comprised the study population. The pharmacist billing information (drug, duration of treatment, dispensing date) and beneficiary data (unique encrypted patient identifier, age, gender and region of residence) were available for each patient. Nitrate therapy was categorized as acute (tablets or sprays) or chronic (transdermal, ointment, sustained release or isosorbide di- or mono-nitrate). A client was defined as an antiplatelet user if they were dispensed a prescription for at least 1 of ASA, clopidrogel, ticlopidine or dipyridamole. Logit regression was used to estimate the independent effects of factors associated with the probability of antiplatelet use; age, gender, region of residence, type of nitrate therapy, length of therapy on nitrate products and indicator variables on the concurrent use of other drugs

Results: The number of clients who were dispensed at least 1 prescription for a nitrate product were 12,084 for VAC clients and 6,366 for NIHB clients during the study period. The proportion of clients who were dispensed at least 1 prescription for an antiplatelet agent was 56.9% for VAC and 59.0% for NIHB respectively. When clients utilizing warfarin were excluded the rate of antiplatelet prescribing increased to 64.9% for VAC and 61.8% for NIHB clients. Among both VAC and NIHB clients, the probability of antiplatelet utilization was higher for males, those using preventative therapy or treatment for CAD and carvedilol. The probability for antiplatelet use decreased with age in the older VAC population but increased with age in the younger NIHB population. Probabilities were significantly lower for those using warfarin. The use of insulin, renal failure drugs, H2 antagonists, proton pump

inhibitors or multiple chronic nitrates were not predictive of antiplatelet use. Logit regression also demonstrated probabilites of antiplatelet use for both populations were lowest in the Pacific region (BC and Yukon) when compared to all other regions of Canada and was highest in Québec.
Conclusions: Utilization of antiplatelets in Aboriginal peoples and the elderly utilizing nitrate therapy remains low. Regional variations in prescribing rates continues to be unexplained.

PP – 7

STRUCTURAL ELEMENTS ASSOCIATED WITH THE PROVISION OF PHARMACEUTICAL CARE IN COMMUNITY PHARMACY PRACTICE IN CANADA

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PURPOSE: Pharmaceutical care is a philosophy of practice and has been presented as an effective process for monitoring drug therapy to meet needs of patients and the health care system. As the pharmacy profession becomes more patient-focused using pharmaceutical care standards, it is important that pharmacists be able to assess the quality of that care and recognize the structural barriers that impede the provision of that care. Structure represents a necessary measure of quality and its assessment is crucial when structure can be associated with process and/or outcomes. The objective of this study was to address the structure and process components of pharmaceutical care and characterize the structural elements that support its provision in community pharmacy practice in Canada.
METHODS: A data collection instrument was developed - the Community Pharmacy Structural Elements Questionnaire, which gathered information regarding structural changes made in community pharmacies. The Behavioral Pharmaceutical Care Scale (BPCS) was also utilized which gathered information regarding pharmacists' efforts towards the provision of pharmaceutical care. The data collection instruments were administered to community pharmacists across Canada who were known to be affiliated with one of the pharmaceutical care models/programs in existence during the period of the study (1998-2000) and were likely to have implemented pharmaceutical care practices. The instruments were also administered to a reference group of community pharmacists who were not affiliated to any pharmaceutical care model/program.
RESULTS: The results revealed the presence of progressive community pharmacy practices in Canada that were actively making structural changes and providing pharmaceutical care. The structural changes that were consistently reported in these community pharmacy practices were re-organization of pharmacists' and pharmacy technicians' duties, formal training program for pharmacists, on-the-job training for pharmacy technicians, incorporation of a private or semi-private counselling room, and incorporation of audio-visual educational equipment. Statistically significant differences ($p < 0.01$) were reported in the frequency of these structural changes made by pharmacies in the highest quartile of the BPCS score distribution compared to those in the lowest quartile.
CONCLUSIONS: These structural element changes in Canadian pharmacies may be a useful resource to assist community pharmacists with the implementation of pharmaceutical care practices.

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PP – 8

Influence of the menstrual cycle on the timing of acute coronary events in young with coronary artery disease

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BACKGROUND: Cardiovascular risk increases in women after menopause at a time when blood 17b-estradiol levels fall. Therefore, we hypothesised that fluctuations of oestrogen during the menstrual cycle could modulate cardiovascular risk such that premenopausal women may sustain an acute coronary event preferentially during the early follicular phase of the ovarian cycle, i.e., during and immediately after menses.
SUBJECTS AND METHODS: This was a prospective study of premenopausal women presenting with acute myocardial infarction or unstable angina. Data on disease history, symptoms, medications, risk factor profiles and menstrual cycle were collected using a detailed questionnaire and medical records. Women who suffered an acute coronary event prior to day 5 of the menstrual cycle (group 1) were compared to those who suffered the event at day ≥ 6 (group 2).
RESULTS: A total of 28 premenopausal women (43.2 ± 4.2 yrs, range 33 - 51 yrs) were included into the study. Significantly more women had an acute coronary event within 5 days of the beginning of their menstrual cycle (group 1, n = 20) rather than later during the menstrual cycle (group 2; n = 8) ($P < 0.012$). All women had at least one cardiovascular risk factor including family history of cardiovascular disease (72% and 75% in groups 1 and 2, respectively), current (79% and 63%) or past (11% and 13%) smoking, hypercholesterolemia (20% and 38%), high blood pressure (15% and 13%) and diabetes (10% and 0%). Measured 17b-estradiol levels were lower in group 1 compared to group 2 (13.04 ± 4.05 pg/ml vs 60.09 ± 45.05 pg/ml, respectively, $P = 0.04$).
CONCLUSIONS: These findings suggest that there is increased vulnerability to acute coronary events in women during and soon after menses. In the presence of risk factors the abrupt decrease of 17β-estradiol during the menstrual cycle may trigger acute coronary events.

PP – 9

PHYSICIAN'S BELIEFS AND PERCEPTIONS OF THE ALBERTA TRIAL PRESCRIPTION PROGRAM

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PURPOSE: The Alberta Trial Prescription Program, which provides eligible seniors with a 7-14 day supply of a new medication, has been operational for 18 months. Physician focus groups were held to explore physician awareness, understanding, and buy-in associated with the program.
METHODS: A total of 24 physicians participated in three focus groups. Selection criteria included urban, general/family practitioners or geriatric specialists that worked at least part-time and at least 20% of their patients were seniors. Physicians with views ranging from negative and unaware of the program to positive and knowledgeable were recruited to examine the diversity of opinion and common responses. Areas of inquiry included: degree of support, awareness and knowledge, and barriers to participation.
RESULTS: Two diverse groups of physicians resulted. One group tended to have little interaction with pharmacists and in general were not supportive of the program. They had a lack of trust and confidence in the pharmacist's ability and skills and preferred to manage trial prescriptions themselves. The second group tended to have current relationships with pharmacists and were more positive towards pharmacists and their value in the health care team. Overall, both groups had a lack of awareness and understanding of the program since the frequency of phone calls from pharmacists and therefore their involvement with the program was low.
CONCLUSIONS: Future program promotion will need to recognise these two diverse physician groups. In addition, there is a need for broad relationship building between pharmacists and physicians that extends beyond the scope of this project.

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PP – 10

COMMUNITY PHARMACY PRACTICE RESEARCH IN CANADA DURING THE LAST DECADE: A CRITICAL ANALYSIS OF THE LITERATURE[3]

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Objectives: To critically review research published on Canadian community pharmacy practice, to provide revised baselines for future research relevant into the local context.

Methods: International Pharmaceutical Abstracts, Embase and Medline/Pubmed databases were searched from 1990 onwards. All publications were retrieved, categorized to separate the research articles then processed into two stages: 1.Descriptive analysis to identify areas studied, themes addressed, research questions and methods applied. 2.Critical appraisal of research designs used and overall findings. The results below illustrate findings of the first stage.

Results: The number of publications has increased notably during recent decades; 437 articles were found, including 81, 144 and 212 articles during the 70s, 80s and 90s onwards, respectively. Out of the 212 articles from the 90s, 59 were research articles. Seven different areas were identified: pharmacists= perceptions/attitudes (n=22), program implementation/evaluation (n=15), type/extent of pharmacists= interventions (n=6), factors affecting healthcare or client interactions (n=6), extent of pharmacy services (n=5), clients= perceptions of pharmacy services or staff interaction (n=4) and opinions about the pharmacist=s role (n=1). A total of 49 data collection procedures appeared in the 44 studies above, involving six different techniques: self-completed questionnaires (n=32), interviews (n= 5), observation (n=4), records (n=4), secret shopper (n=2) and focus groups (n=2).

Conclusions: The growing number of publications through the decades reflects the expansion of this field in Canada. The predominant use of self-completed questionnaires warrants researchers= attention to benefit from the strength and credibility of other techniques. Illustration of the areas studied would allow researchers to identify opportunities and suggest agenda for future research.

PP – 11

DRUG USE EVALUATION OF RESPIRATORY TRACT MEDICATIONS AMONG MEMBERS OF THE CANADIAN FORCES

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BACKGROUND: Recent modifications have been made to the Canadian Consensus Guidelines on Asthma. However, reports from the general literature indicate that many patients with reactive airways disease do not adhere to expert recommendations, and as a result their illness remains poorly controlled. To date, there is no comprehensive data on the severity, incidence, and management of asthma within the Canadian Forces (CF). Availability of such data would allow for development of targeted intervention strategies for enhancing management of asthma and other reactive airways disease.

METHODS: Patients receiving inhaled respiratory tract agents or oral leukotriene antagonists will be identified from the pharmacy records at selected CF bases. The medication records of all such patients will undergo retrospective review to analyze patterns of respiratory drug use. All patients identified as receiving respiratory drugs will also be eligible to undergo medical chart review and telephone interview, providing consent is provided. However, telephone interviews will not be completed for patients who are receiving respiratory drugs for management of chronic obstructive pulmonary disease (COPD) alone.

ANTICIPATED RESULTS: Results from the analyses of pharmacy medication records will provide information on the frequency, intensity and types of inhaled respiratory agents employed. Data from the medical chart review may, when coupled with pharmacy records, allow identification of the subtypes of reactive airways disease seen and differences (if any) among their treatment strategies. Data collected via telephone surveys should allow us to assess the level of compliance with various recommendations in the Canadian asthma guidelines.

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[3] Presented in part at a local symposium / Faculty of Pharmacy, University of Toronto

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PP – 12

EVALUATING THE EFFECTS OF CFC-FREE INHALER SUBSTITUTION AMONG CANADIAN FORCES MEMBERS: A CONTINUOUS QUALITY INITIATIVE

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Background Due to concerns about the harmful effects of chlorofluorcarbons (CFCs) on the ozone layer, legislation is being implemented which will ban CFCs from all metered-dose inhalers (MDIs) in accordance with the Montréal protocol. In anticipation of these changes to legislation, the Canadian Forces Health Services developed a policy in July 2001 which would allow members receiving conventional MDIs to be switched to CFC-free formulations.
Purpose: 1- To assess pharmacy compliance with the CFC-free policy among Canadian Forces members. 2- To determine patient knowledge of the rationale behind the substitution policy regarding CFC-free inhalers, 3- To document patient satisfaction with information provided by military pharmacists about CFC-free inhalers. 4- To document patient satisfaction/dissatisfaction with the new CFC-free inhalers.
Methods: All patients who received an inhaled respiratory tract agent from at least one of seven selected Canadian Forces bases will be eligible for inclusion in this study. This study will involve two interventions: 1) an analysis of the pharmacy medication records between Jan 1, 2001 and Dec 31, 2001, to determine medication usage patterns, and 2) a telephone survey, to assess patient awareness about and acceptance of the new CFC-free inhalers.
Results: Pharmacy records from three bases surveyed to date indicate that the CFC-free salbutamol therapy is being initiated in almost all patients receiving bronchodilators. However, CFC-free corticosteroid formulation are not been employed as extensively. Results from the telephone survey should indicate whether difference in the formulations have impacted significantly on patient satisfaction.
Conclusions: Complete analysis of the pharmacy records and data from the telephone survey will indicate whether the Canadian Forces CFC-free substitution policy has impacted upon patient care.

PP – 13

EVALUATION OF PRESCRIBING COMPETENCE AMONG PHYSICIAN ASSISTANTS IN THE CANADIAN FORCES

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BACKGROUND: The Canadian Forces currently grants limited prescribing privileges to physician assistants (PA). To ensure that PA are prescribing in a competent manner, a written examination was developed as part of their overall certification process. Our department was tasked to co-ordinate the development, administration and analysis of this examination.
DEVELOPMENT OF THE EXAM: A detailed review of PA practice patterns was undertaken to construct an exam blueprint. A team of prescribers drafted questions based on their clinical experience, and a modified Angoff procedure was performed to establish a tentative pass-fail mark.
ADMINISTRATION OF THE EXAM: The exam was translated into French, and administered to both PA and Medical Assistants (MedA). The latter "lesser-qualified" candidates served as a control group to assess the validity of the exam.
ANALYSIS OF EXAM RESULTS: A total of 192 candidates wrote the exam, of which 111 were PA. Exam reliability exceeded the minimum recommended in the literature (>0.8 both overall and within groups). PA candidates performed significantly better on the exam than MedA candidates (mean scores 63.09% vs 55.61% respectively, $p<0.0001$). Although the exam was both reliable and valid, the pass-fail standard was adjusted as the Angoff method appeared to underestimate the difficulty of the examination. Upon application of the adjusted marking scheme, 2/3 of the PA candidates met the standard. Of the PA candidates who did not meet the standard, roughly 12% will undergo further practice review while the remaining 21% will receive recommendations for further training before being assigned prescribing duties.
IMPACT: The credibility and rigor of our examination process, and the positive feedback received thus far, have helped to enhance the profile of the pharmacy profession within our institution. A new proposal has since been made to evaluate other health care workers' competence to provide non-prescription medications, and will allow our department another opportunity to help establish a uniform standard of clinical practice in this regard.

PP – 14

PHARMACIST-BASED LIPID CLINICS - DEVELOPMENT AND IMPLEMENTATION IN THE CANADIAN FORCES

Major Régis Vaillancourt, Pharm D, Clinical Pharmacy Advisor, L. Maria Gutschi, Pharm D, Drug Utilization Pharmacist, and Janice Ma, Pharm D, Pharmacy Consultant, from Directorate of Medical Policy, Pharmacy Policy and Standards, Canadian Forces Health Services Ottawa, ON, Captain Shannon Sinclair, Pharm D, Director of Pharmacy Services, Formation Health Services Unit (Pacific), Victoria, BC, Lieutenant-Commander Danette Beechinor, Director of Pharmacy Services, Formation Health Services (Halifax), Halifax, NS

Rationale: ***Two previous studies performed in our facility demonstrated gaps in the management of dyslipidemias, particularly for patients at high and very- high risk of cardiovascular disease complications . Since lipid clinics have been shown to improve the attainment of target lipid goals and adherence to lipid-lowering therapies, pharmacist-based lipid clinics were incorporated in ambulatory care clinics in the Canadian Forces.***

Methods: A pharmacist-managed, physician-directed, lipid clinic protocol was developed based on the current literature and received approval by the Canadian Forces pharmacy and therapeutics committee in January 2000. Pharmacists employed in Canadian Forces medical clinics were authorized to titrate dosages of lipid-lowering therapies, substitute drugs within a class of agents, order laboratory tests, provide lifestyle counseling, and refer patients to other health care providers in order to attain or improve lipid control. Initiation of a new medication, switch to a different drug class, or the addition of an another lipid-lowering agent required physician consultation and approval. Clinic appointments were made based on referrals from physicians, ambulatory care pharmacists or by self-referral by the patient themselves. The lipid clinic protocol was applied uniquely at three designated Canadian Forces medical clinics located in Halifax, Ottawa, and Victoria. At the Ottawa site, the pharmacist was employed at the family practice offices one afternoon per week, while the Halifax and Victoria pharmacists operated their lipid clinics from the pharmacies on a full time basis.

Results: A total of 144 patients were seen and assessed by pharmacists employed at three lipid clinic sites. Twenty-seven of 144 patients (18.8%) were lost to follow-up. Of the 117 remaining patients, only 48 patients (41.0%) met their target LDL-cholesterol goal at the baseline visit, while 40 patients (34.2%) met all target lipid levels in accordance with the Canadian guidelines. After pharmacist assessment and interventions, 94 of 117 patients (80.3%) had achieved their LDL cholesterol goal at follow-up and 71 of 177 patients (60.7 %) had met all of their target lipid goals. Twenty-four of the 93 pharmacist recommendations (25.8 %) were directly related to drug therapy, while the remainder were non-pharmacological recommendations. All pharmacist recommendations were accepted by ambulatory-care physicians at clinic sites.

Conclusions: Pharmacist-based lipid clinics resulted in improved management of patients with dyslipidemia.

Key Words: dyslipidemia, ambulatory-care clinics, pharmaceutical care

PP – 15

PROVISION OF NON-PRESCRIPTION MEDICATIONS TO CANADIAN FORCES MEMBERS THROUGH CIVILIAN PHARMACIES: A PILOT PROJECT

Major Régis Vaillancourt, B. Pharm Pharm D; Alan Gervais, BSP, Michel Trottier, B.Sc.Phm. Directorate of Medical Policy, Pharmacy Policy and Standards, Canadian Forces Health Services, Ottawa, ONBACKGROUND: Regarded as the most accessible drug expert, the pharmacist is in an ideal position to assist patients with the selection and monitor their use of OTC medications. Patients treating self-limiting ailments with OTCs as an alternative to prescription drugs is cost-effective.In April 2000, the Canadian Forces (CF) introduced a new drug management program. Under this program, selected OTC medications with proven therapeutic value are provided at Crown expense to serving CF members. During the implementation of this national program, it has been noted that there is a discrepancy in the provision of OTC drugs between CF members with access to a Base Pharmacy and those who obtain pharmaceuticals through civilian pharmacies.

The objective of this project are:

1) to test the feasibility of implementing a process to allow CF members to obtain selected OTC drugs from a civilian pharmacy directly on-line;

2) to assess the cost-effectiveness of the program; and

3) to assess the impact of such an initiative upon patient care and satisfaction.

This pilot project was initiated in locations where CF members do not have access to a Base Pharmacy: Longuepointe, PQ; London, ON; and Moncton, NB. Approximately 1000 CF members will participate in this pilot project. METHOD: A pilot project aiming to facilitate the provision of selected OTC drugs by civilian pharmacists will be implemented. As part of the pilot project, civilian pharmacists is capable of submitting claims for benefit

OTC drugs directly on-line through the Atlantic Blue Cross computer (ABCC) electronic network, once they have assessed the member's need for such product.
CF members participating in the pilot project are issued a wallet card identifying them as eligible to receive selected OTC medications from a community pharmacist, as well as which OTC medications qualify as a benefit. This wallet card provides instructions to the civilian pharmacists, for the procedure required to process the provision of OTC medications through the ABCC network . To avoid overuse of such medications, limited quantities of each OTC medication, reflecting normal usage patterns for a single CF person, would be built into the ABCC system. Data will be collected and analysed for a 6 month period starting at the end of January 2002. The number of hits on the ABCC system of pharmacists providing OTC benefits to CF members will be tabulated. All CF Members accessing this service during the pilot period will be asked to participate in a quality assurance survey. This survey will determine their satisfaction with the process, the type of pharmacist intervention, and the clinical outcome of the pharmacist

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The Impact of a Clinical Pharmacist on Patient and Economic Outcomes on the Child and Adolescent Mental Health Unit at the IWK Health Centre

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Anas El-Aneed

A New Peptide-Liposomes/Protamine/DNA (LPD) Complex for Hepatocyte-Selective Targeting

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Synthesis and Characterisation of Novel pH-Sensitive Unimolecular Polymeric Micelles as Potential Carriers for the Oral Delivery of Hydrophobic Drugs.

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Julia Kennedy

Antisense Evidence for NF-κB-Mediated Signal Transduction in the Mechanism of Phenytoin Embryopathies.

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Evan Kwong

Pharmacogenetics of Codeine Bioactivation in Pediatric Dental Patients: Development of a Real-Time, Rapid-Cycle Method for CYP2D6*10 Genotyping

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Ultrasensitive Immunoassay for the Detection of the Walkerton Pathogen Escherichia Coli 0157

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Influence of the Menstrual Cycle on the Timing of Acute Coronary Events in Young with Coronary Artery Disease

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Expression Analysis of HOXA2 Gene during Oligodendrogenesis

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Effect of Modulation of Liver Fatty Acid Binding Protein Levels on Hepatocyte Mitotic Activity

APOTEX P.A.C.E UNDERGRADUATE PHARMACY PRACTICE SUMMER RESEARCH AWARD 2002

Université Laval

Louis Bergeron

"A descriptive study of the use of personal computers by hospital pharmacists in the area of Québec city"

Supervisors: Anne Dione (faculty), Jean-Pierre Bernier (practitioner)

University of Saskatchewan

Andria Dyck

"Analysis of Talking Styles of Pharmacists

Supervisors: Jeff Taylor (faculty)

University of Alberta

Tina Kang

"Treatment and control of hypertension in the institutionalized elderly"

Supervisors: Ross Tsuyuki (faculty/practitioner), Dr. McAlister, General Internal Medicine; Dr. Aligakirshnan, Geriatrics

University of British Columbia

Ms. Rita Lung

"Physician Dispensing of Non-Prescribed Emergency Contraceptive Pills in Women in British Columbia"

Supervisors: Judith Soon (faculty/clinician)

Université de Montréal

Judith Marin

"Soins pharmaceutiques et programme ambulatoire de MPOC"

Supervisors: Marie-France Beauchesne,(faculty/practitioner) Lucie Blais (faculty)

University of Manitoba

Ms. Meghan McKechnie

"Herb/drug interactions in the Elderly: Closing the Knowledge Transfer Gap"

Supervisors: Drs. Ruby Grymonpre & Colin Briggs (faculty) and pharmacy practitioners (Tracy Lelong-Young; Nancy Remillard; Trevor Shewfelt, Nancy Metcalfe, Camella Crook, Sigfried Pfahl, Morna Cook, Mark Scott, Guy Doan, Jay Rich

Dalhousie University

Ryan Murphy

"*The evaluation of the blister pack system on medication errors".*

Supervisors: Rita Caldwell (faculty) Adil Virani (practitioner)

University of Toronto

Mr. Vinay Phokeo

"Attitudes of Community Pharmacists towards Patients using Mental Health Associated Medications"

Supervisors: Dr. Lalitha Raman-Wilms (faculty); Dr. Beth Sproule (practitioner)

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