# Welcome from Simon Albon
## Chair of Conference Planning Committee

Dear Colleagues:

On behalf of the AFPC Conference 2004 Planning Committee, it is my pleasure to welcome you to Vancouver for the AFPC Annual General Meeting. In addition, I would like to welcome colleagues attending the concurrent CSPS meeting.

It is an interesting time to be involved in academic pharmacy. Many changes are taking place on the educational and research fronts, providing many challenges and opportunities for growth and new directions. The theme of the AFPC Conference 2004, "Connecting Teaching and Research: Moving Beyond Tradition" will attempt to capture some of the issues and challenges facing academic pharmacy today. Our Teacher's Conference will tackle an important emerging issue regarding our valuable teaching and learning work, "The Scholarship of Teaching and Learning", and will continue AFPC's work on program evaluation initiated at our Winnipeg meeting two years ago. Our research day will include a focus on personnel challenges facing academia, a joint session with CSPS, and a closing symposium linking pharmacy practice research with curriculum. The conference opens with a celebration of achievements in Canadian pharmacy and will conclude with a banquet at the Museum of Anthropology on the UBC campus.

I must thank the incredible group of colleagues that made up the local conference planning committee. I feel privileged to have worked with you over the past year for the success of the conference. I would also like to thank our numerous sponsors who have made this conference possible.

Finally, thank you for joining us in Vancouver. I hope you enjoy the conference as well as this opportunity to meet old and new friends from across Canada. I recommend you take some time to explore our beautiful "west coast" city.

We are thrilled to have you here!

Sincerely,

Simon Albon
Chair, AFPC Conference 2004 Planning Committee

# Table of Contents

# Section 1:

# Introduction

# Welcome from Susan Mansour
## AFPC President

Dear Colleagues:

Welcome to the AFPC Conference 2004. I would also like to welcome delegates to the concurrent CSPS Symposium. On behalf of the executive and council of AFPC, we welcome you to beautiful Vancouver and hope that you enjoy both the meetings and the locale. This conference is exciting as it is clear that the AFPC/CSPC membership have many common areas of interest, including research/scholarship, funding, and education. These are important issues for us all. I hope that you will be able to join AFPC for most of our sessions, especially our common sessions. The opening dinner provides an opportunity for us to come together to hear presentations from award winning researchers and educators and to celebrate their accomplishments. Our joint session on Saturday morning provides the opportunity to dialogue about the adequacy of current and future supply of pharmaceutical scientists in Canada, an issue that is critical to us all.

I would like to gratefully thank the organizing committee chaired by Simon Albon with members Frank Abbott, Colleen Brady, Suzana Cindric, Lisa Dolovich, Lynda Eccott, David Fielding, Fekhreddin Jamali, Marion Pearson, Ingrid Price, Julie Sureweere, Hilary Watson, and Marguerite Yee. An inordinate amount of time and effort is dedicated to planning such a meeting and we are grateful for their volunteer work. I would also like to thank all our sponsors who make these meetings possible.

Please enjoy the events over the next few days – I look forward to meeting and becoming reacquainted with many of you.

Sincerely,
Susan Mansour, BSc(Pharm), MBA
President AFPC, 2003-2004

# Welcome from Dr. Martha Piper

## President, University of British Columbia

THE UNIVERSITY OF BRITISH COLUMBIA

6328 Memorial Road
Vancouver, B.C. Canada V6T 1Z2

Telephone (604) 822-2121
Fax (604) 822-5055

**Martha C. Piper**, Ph.D.
*President and Vice-Chancellor*

May 28, 2004

Dear Conference delegates:

On behalf of the entire community of the University of British Columbia, I would like to welcome you to the 2004 Association of Faculties of Pharmacy of Canada (AFPC) Conference. We are delighted to be hosting this conference. Its dedication to excellence in pharmaceutical education, scholarly activity, and research exemplifies UBC's own pursuit of excellence, and it invites us to reflect on what we are doing and how well we are doing it. Not only that, but innovations in the pharmaceutical field improves life in British Columbia, Canada, and the world, setting new and important guidelines for higher education in this country. By hosting the AFPC, UBC supports new initiatives in the pharmaceutical sciences, and I wish all of you great success at this conference.

I hope you enjoy your visit to our beautiful campus, and that you take full advantage of all that the 2004 AFPC Conference has to offer.

Yours sincerely,

Martha Piper

Martha C. Piper

# Welcome from Dr. Robert Sindelar

## Dean, Faculty of Pharmaceutical Sciences, University of British Columbia

THE UNIVERSITY OF BRITISH COLUMBIA

**Office of the Dean**
**Faculty of Pharmaceutical Sciences**
2146 East Mall
Vancouver, B.C. Canada V6T 1Z3
Tel: (604) 822-2343
Fax: (604) 822-3035

June 2004

Dear Colleagues and Friends:
Chers collègues et amis:

On behalf of The University of British Columbia Faculty of Pharmaceutical Sciences, I welcome you to the 2004 Association of Faculties of Pharmacy of Canada (AFPC) Conference in beautiful Vancouver, British Columbia. The conference focus is "Connecting Teaching and Research: Moving Beyond Tradition" which reflects emerging and important issues in pharmacy education, experiential learning, and pharmacy practice research that will make a profound difference for the continuing development of the profession. The meeting also offers you a good opportunity to build and enhance interactions among your academic and professional colleagues.

We hope that while you are here, you reenergize with the excellent and comprehensive educational program as well as get a chance to tour some of the spectacular natural wonders that are a part of Vancouver and her surroundings. We're very excited about this year's speaker line-up, the information-packed education program and an outstanding social agenda. It is truly an exciting time of significant changes to practice and unprecedented technological advances within the profession that will shape the future of pharmacy practice, pharmaceutical care, and pharmaceutical discovery.

I wish to extend thanks to the Conference Organizing Committee, all of the members of the sub-committees, and the many who contributed to assure the success of this conference. We are looking forward to the next few days of learning, networking, playing and growing.

Should you require any assistance during your stay in Vancouver, please do not hesitate to contact any of the UBC contingent. Again, a warm welcome and best wishes for a highly successful conference.

Sincerely,

Robert D. Sindelar, Ph.D.
Professor and Dean

# AFPC Conference 2004 Planning Committee

| | |
|---|---|
| **Simon Albon, Chair**<br>University of British Columbia | Subcommittee: Registration Logistics, Conference Budget, Exhibitors, Teacher's Conference I and II |
| **Frank Abbott**<br>University of British Columbia | Subcommittee: Registration Logistics, Conference Budget, Exhibitors, AFPC/CSPS Joint Session |
| **Colleen Brady**<br>University of British Columbia | Subcommittee: Registration Desk and Packages |
| **Suzana Cindric**<br>University of British Columbia | Subcommittee: Conference Program, Signage |
| **Lisa Dolovich**<br>McMaster University | Subcommittee: Pharmacy Practice Research Symposium |
| **Lynda Eccott**<br>University of British Columbia | Subcommittee: Banquets/Receptions (Opening Dinner, Banquet) |
| **David Fielding**<br>University of British Columbia | Subcommittee: Teacher's Conference I and II |
| **Fakhreddin Jamali**<br>University of Alberta | Subcommittee: AFPC/CSPS Joint Session |
| **Marion Pearson**<br>University of British Columbia | Subcommittee: Teacher's Conference I and II |
| **Ingrid Price**<br>University of British Columbia | Subcommittee: AFPC Poster Session, Teacher's Conference I and II |
| **Julie Sureweere**<br>University of British Columbia | Subcommittee: Registration logistics, Name tags |
| **Hilary Watson**<br>University of British Columbia | Subcommittee: School Poster |
| **Marguerite Yee**<br>University of British Columbia | Subcommittee: Banquets/Receptions (Opening Dinner, Banquet) |

# Looking Ahead to AFPC Conference 2005

**COME TO SASKATOON IN 2005**

The 2005 AFPC AGM will be held on the banks of the beautiful South Saskatchewan River at the historic Delta Bessborough Hotel in Saskatoon, Saskatchewan from June 25-27. Events include the opening reception on Friday June 25 at the Delta Bessborough and the conference banquet at the Ukrainian Museum of Canada on Saturday evening. Ukrainian choral singers will be part of the Saturday evening festivities. The theme for the research symposium is "Interdisciplinary Collaboration in Teaching and Research." To reflect our association with CCCEP and the Life-long Learning Conference held immediately following the AFPC AGM (June 26-29, 2005), a Sunday morning workshop on life-long learning and academics is also being planned. Hope to see you there!
Planning Committee Chair: Roy Dobson, University of Saskatchewan

# AFPC Executive & Councillors

## Executive

| | |
|---|---|
| **Susan Mansour, President**<br>College of Pharmacy<br>Dalhousie University | P: (902) 494-3504<br>F: (902) 494-1396<br>E: susan.mansour@dal.ca |
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| **Frank Abbott, Executive Director**<br>Association of Faculties of Pharmacy of Canada | T: (604) 222-0221<br>F: (604) 222-2574<br>E: fabbott@telus.net |

## **Councillors** (term completion)

| | |
|---|---|
| **Simon Albon (2004)**<br>Faculty of Pharmaceutical Sciences<br>University of British Columbia | T: (604) 822-2497<br>F: (604) 822-3035<br>E: trout@unixg.ubc.ca |
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| **Mike Namaka (2007)**<br>Faculty of Pharmacy<br>University of Manitoba | T: (204) 474-8380<br>F: (204) 474-7617<br>E: namakamp@ms.umanitoba.ca |
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| **Anne Marie Whelan (2006)**<br>College of Pharmacy<br>Dalhousie University | T: (902) 494-3503<br>F: (902) 494-1396<br>E: Anne.Marie.Whelan@dal.ca |
| **Lili Wang (2005)**<br>School of Pharmacy<br>Memorial University | T: (709) 777-7053<br>F: (709) 777-7044<br>E: lwang@mun.ca |

# Vancouver


DOWNTOWN VANCOUVER
DOWNTOWN ACCOMMODATIONS
1 Barclay Hotel
2 Best Western Chateau Granville Hotel
3 Best Western Downtown
4 Blue Horizon Hotel
5 Bosman's Hotel
6 Buchan Hotel
7 Budget Inn – Patricia Hotel
8 Burrard Motor Inn
9 Century Plaza Hotel & Spa
10 Coast Plaza Suite Hotel at Stanley Park
11 Crowne Plaza Hotel Georgia Vancouver
12 Days Inn Vancouver Downtown
13 Delta Pinnacle
14 Delta Vancouver Suites
15 Empire Landmark Hotel & Conf. Ctr.
16 Executive Inn Hotel – Downtown Vancouver
17 Four Seasons Hotel
18 Georgian Court
19 Greenbrier Hotel
20 Hampton Inn & Suites
21 Holiday Inn Hotel & Suites - Downtown
22 Hotel Dakota
23 Hotel Vancouver
24 Howard Johnson Hotel
25 Hyatt Regency Vancouver
26 Inn at False Creek, Quality Hotel Downtown
27 Jolly Taxpayer Hotel
28 Kingston Hotel Bed & Breakfast
29 Listel Vancouver
30 Metropolitan Hotel
31 Oceanside Hotel
32 Pacific Palisades Hotel
33 Pan Pacific Hotel Vancouver
34 Parkhill Hotel
35 Ramada Inn & Suites – Downtown Vancouver
36 Ramada Limited Downtown
37 Renaissance Vancouver Harbourside
38 Residence Inn by Marriott
39 Riviera Hotel
40 Robsonstrasse Hotel
41 Rosedale on Robson Suite Hotel
42 Royal Hotel
43 St. Regis Hotel
44 Sandman Hotel Vancouver
45 Sheraton Suites Le Soleil
46 Sheraton Wall Centre Hotel
47 Sutton Place Hotel
48 Terminal City Club Tower Hotel
49 Travelodge Vancouver Centre
50 Tropicana
51 Victorian Hotel
52 Waterfront
53 Wedgewood Hotel
54 Westin Bayshore Resort & Marina Vancouver
55 Westin Grand Vancouver
56 Y.M.C.A. Hotel
57 Y.W.C.A. Hotel/Residence
STANLEY PARK
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Coal Harbour
Burrard Inlet
False Creek
Yaletown
Gastown
Chinatown
Granville Island
Tourist info
604.683.2000
Plaza Level, 200 Burrard St.
Vancouver Convention & Exhibition Centre
Cruise Ship Terminal
Floatplane Terminals
Heliport
Georgia Viaduct
Plaza of Nations
English Bay Beach
Sunset Beach Park
Vanier Park
Aquatic Centre
Granville Bridge
Burrard Bridge
Cambie Bridge
Pacific Central Station
City Hall
CONVENTION FACILITIES
A B.C. Place Stadium
B Cruise Ship Terminal
C General Motors Place
D Plaza of Nations
E Vancouver Convention & Exhibition Centre
F Morris J. Wosk Centre for Dialogue
LEGEND
Aquabus
Boat Charters
Bus Depot
False Creek Ferry
Hospital
One-Way Street
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SkyTrain Route with Station
Train Station
Visitor Info Centre
Parks

For more information on events, restaurants, and attractions in Vancouver and it's surrounding municipalities, please visit Tourism Vancouver at:

**Vancouver *Tourist*info Centre**
Plaza Level, 200 Burrard Street
(www.tourismvancouver.com)

or consult the Tourism Vancouver Official Visitors' Guide in your Registration package or the hotel concierge.

### Select Vancouver Attractions:

Stanley Park
Vancouver Aquarium
Granville Island
Science World
Gastown
Robson Street and Yaletown for shopping
Dr. Sun Yat-Sen Classical Chinese Garden (Chinatown)
Vancouver Art Gallery
Canada Place

## Select events in Vancouver for June 9-13, 2004:

| Date | Event | Venue |
|---|---|---|
| Jun 03 2004 - Sep 26 2004 | **Bard on the Beach**<br>Playing in repertory in the 525-seat Mainstage tent will be the romantic favourite Much Ado About Nothing (June 3 to Sept. 26). | Vanier Park |
| Jun 05 2004 - Sep 06 2004 | **Baja to Vancouver: The West Coast and Contemporary Art**<br>Baja to Vancouver surveys contemporary art from the West Coast of North America. | Vancouver Art Gallery |
| May 06 2004 - Jun 13 2004 | **Cirque du Soleil presents QUIDAM**<br>Quidam: a nameless passer-by, a solitary figure lingering on a street corner, a person rushing past. It could be anyone, anybody. Someone coming, going, living in our anonymous society. | Concord Pacific Place |
| May 20 - ongoing | **Tony and Tina's Wedding**<br>Hoarse Ravern Theatre's smash hot comedy continues to thrill and delight audiences going into its seventh staight sell-out year in Vancouver. | St. Andrew's Wesley Church |
| Apr 13 - ongoing | **Sea Stories and Symbols: A timeless portrait of ancient myths and folklore**<br>Painter d'Elaine Ann Herard Johnson has always been inspired by the wonderment of the sea. | Vancouver Maritime Museum |
| Feb 13 2004 - Aug 30 2004 | **Ocean Oasis**<br>Ocean Oasis is a fascinating journey into the bountiful seas and pristine deserts of two remarkably different, but inextricably linked worlds – Mexico's Sea of Cortes and the Baja California desert. | CN IMAX Theatre at Canada Place |

# AFPC Conference 2004

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# Section 2:

# Program at a Glance

# AFPC Conference 2004 Program

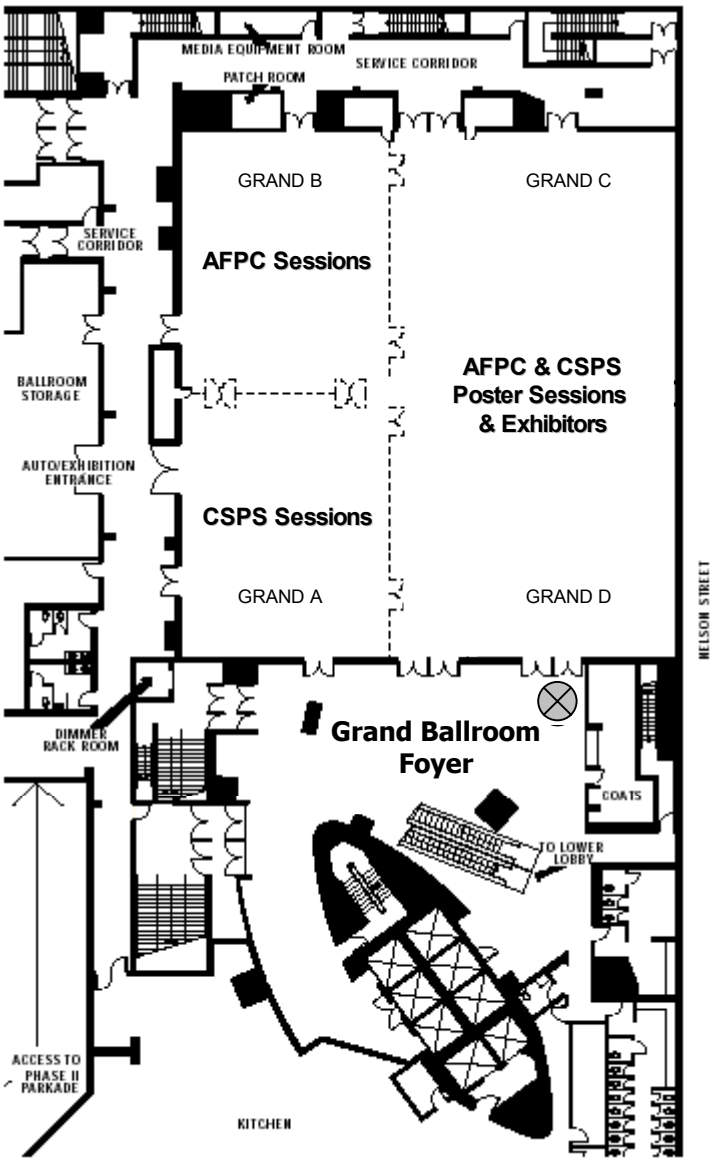
## Connecting Teaching and Research: Moving Beyond Tradition

AFPC Annual Conference
June 10-12, 2004
Sheraton Vancouver Wall Centre Hotel
Vancouver, BC

| | | |
|---|---|---|
| **WEDNESDAY, JUNE 9, 2004** | | |
| 8:00 am – 5:00 pm | Conference Registration | Grand Ballroom Foyer |
| **THURSDAY, JUNE 10, 2004** | | |
| 8:00 am – 7:00 pm | Conference Registration | Grand Ballroom Foyer |
| 6:00 pm – 9:30 pm | Opening Dinner and Presentations by AFPC Award Winners | Grand Ballroom B |
| | School Posters | Grand Ballrooms C & D |
| 7:00 pm | Opening of Conference: Welcome from Dean of Host Faculty, Conference Chair, and Presidents of AFPC and CSPS.<br>AFPC Research Committee Chair – Presentations by AFPC Award Winners in Teaching and Research | |
| **FRIDAY, JUNE 11, 2004** | | |
| 7:30 am – 5:00 pm | Conference Registration | Grand Ballroom Foyer |
| 7:30 am – 5:00 pm | Exhibits and AFPC Posters | Grand Ballrooms C & D |
| 7:30 am – 8:00 am | Continental Breakfast | Grand Ballroom B |
| 8:00 am – 12:00 pm | **Teacher's Conference I:**<br>**"The Scholarship of University Teaching and Learning"**<br>• What is the Scholarship of University Teaching? Speaker: *Richard Kennedy*, University of Arkansas<br>• Developing Scholarly Approaches to Teaching and Learning: Theory-Practice Implications. Workshop facilitator: *Harry Hubball*, University of British Columbia<br>• Is anyone listening? Implications for recognition, tenure and promotion. Panelists: *Neil Guppy*, Associate VP Academic, University of British Columbia; *Wayne Hindmarsh*, Dean, University of Toronto; *Jacques Turgeon*, Dean, University of Montréal | Grand Ballroom B |
| 12:00 pm | Lunch available | Grand Ballroom B |
| 12:00 pm – 1:30 pm | Meeting exhibitors and viewing of posters (author presentations) | Grand Ballrooms C & D |
| 1:30 pm – 5:00 pm | **Teacher's Conference II:**<br>**"Measuring Educational Outcomes"**<br>• Operationalizing program evaluation. Speaker: *David Fielding*, University of British Columbia<br>• Measurement of educational outcomes: Experiences from the University of Houston Center for Assessment. Speaker: *Julianna Szilagyi*, University of Houston | Grand Ballroom B |
| Friday Evening | Free | |

| **SATURDAY, JUNE 12, 2004** | | |
|---|---|---|
| 7:30 am – 2:00 pm | Conference Registration | Grand Ballroom Foyer |
| 7:30 am – 8:00 am | Continental Breakfast | Grand Ballroom B |
| 8:00 am – 10:30 am | Meet the Exhibitors: A closer look at e-portfolios and program evaluation systems<br>*Academic Management Systems, Nuventive* | Grand Ballroom B |
| 10:30 am – 11:55 am | Joint Session with CSPS<br>Roundtable discussion: *Pharmaceutical scientists and society: Is the supply meeting the demand?*<br>Chairs*: Frank Abbott*, AFPC, and *Fakhreddin Jamali*, CSPS | Grand Ballroom A |
| 12:00 pm – 1:30 pm | AFPC Annual General Meeting (includes lunch) | Port McNeill Room |
| 2:00 pm – 5:00 pm | **AFPC Pharmacy Practice Research Symposium 2004**<br>**"The arrow goes both ways: Linking pharmacy practice research with curriculum"**<br>2:00 pm Introduction to the Session by the Chair<br>*Lisa Dolovich,* Department of Family Medicine<br>McMaster University<br>2:15 pm Experiences with the UBC SPEP program<br>*Rosemin Kassam,* Faculty of Pharmaceutical Sciences,<br>University of British Columbia<br>2:45 pm Integrating Family Medicine and Pharmacy to Advance Primary Care Therapeutics: Development of a Training and Mentorship Program<br>*Zubin Austin* and *Lisa Dolovich,* Leslie Dan Faculty of Pharmacy, University of Toronto<br>3:15 pm Innovative Pharmacy Practice: How can Innovation Guide the Training of the Next Generation of Pharmacy Practitioners?<br>*Judith Soon,* CORxE, Faculty of Pharmaceutical Sciences<br>University of British Columbia<br>3:30 pm Coffee Break<br>4:00 pm Submitted Presentations (15 minutes each):<br>Evaluation of Pharmacist Practice in an Interdisciplinary Primary Care Team-based Setting: Implications for Pharmacy Education<br>*Jana M. Bajcar, Natalie Kennie, Tom Einarson,* Leslie Dan Faculty of Pharmacy, University of Toronto<br>Experiences with Collaborative Practice among Pharmacy and Nutrition Students Assessing a Standardized Patient<br>*Roy Dobson, Jeff Taylor, Jane Cassidy, Doreen Walker,* College of Pharmacy and Nutrition, University of Saskatchewan.<br>4:30 pm Panel (Lisa Dolovich, Rosemin Kassam, Zubin Austin, Judith Soon, Jana Bajcar, Roy Dobson) to lead large group discussion and development of recommendations for use at each faculty<br>5:00 pm Adjourn | Grand Ballroom B |
| 5:30 pm | Bus leaves hotel for Museum of Anthropology UBC Campus for AFPC Awards Banquet | Outside Hotel Lobby |
| 10:15 pm | Bus leaves Museum to return to hotel | Outside Museum |

# AFPC Conference 2004 Floor Plan




⊗ AFPC Registration Desk

**Sheraton Vancouver Wall Centre**
**North Tower**
**Lower Lobby**

# Section 3:

# Opening Dinner & Awards Presentations

**Thursday, June 10, 2004**
**6:00 pm – 9:30 pm**
**Grand Ballroom B**

# AFPC Conference 2004 Award Winners

## AFPC/GlaxoSmithKline Graduate Student Research Award

### Thomas Chacko Pulinikunnil, MS

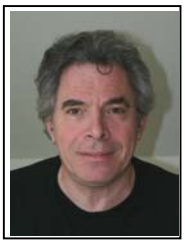
PhD Candidate, Faculty of Pharmaceutical Sciences, University of British Columbia

Thomas Chacko Pulinikunnil obtained his Bachelors degree in Pharmaceutical Sciences from Bombay College of Pharmacy, Mumbai, India in 1998. Subsequently, he pursued his MS degree in Pharmacology from NIPER (National Institute of Pharmaceutical Education and Research), an institute of national importance in India. Later on, he was employed at Quest Institute of Life Sciences, of Nicholas Piramal (formerly, Aventis India Limited) as a Junior Research Scientist for two years and was primarily involved in the screening of cardioprotective agents. Subsequently, he applied for and obtained admission as a PhD candidate in the laboratory of Dr. Brian Rodrigues, Faculty of Pharmaceutical Sciences at the University of British Columbia in August 2001. During his tenure at UBC he has been the recipient of a CIHR/Rx&D graduate fellowship and more recently a Doctoral Research Award from the Heart and Stroke Foundation National Scholarship Canada. His publications include two first author manuscripts, three co-authored manuscripts, nine abstracts, and two review articles. Additionally, he has three manuscripts that are currently in review. Furthermore, he was awarded the "Bill Simpson Award 2004" for the "Best Pharmacology Graduate Student" in the Faculty of Pharmaceutical Sciences at UBC. His manuscript, published in Cardiovascular Research, was rated as the best manuscript and selected as winner of the AFPC/GlaxoSmithKline Graduate Student Research Award for 2004.

**Abstract**

The prevalence of diabetes in Canada is between 3-6%, with the number of patients expected to almost double over the next 16 years. In diabetic patients, the risk of heart disease and hypertension is increased 2-4 times with closely associated lipid dysregulation. Under physiological conditions, the heart acquires most of its energy from metabolism of two major fuels, carbohydrates and free fatty acids (FA). One mechanism for FA provision to the heart involves hydrolysis of circulating triglycerides by lipoprotein lipase (LPL) positioned at the coronary artery lumen of the heart. In acute models of diabetes, there is rapid amplification of LPL at the coronary luminal surface. Our research has focused on mechanisms that regulate LPL at this location, given the correlation between LPL and its ability to accelerate heart disease. Since effective blood glucose control is complicated in diabetic patients, it is possible that over time, these patients are predisposed to brief periods of insulin deficiency, increased luminal LPL, abnormal FA supply and utilization by the heart leading to a number of metabolic, morphological, and mechanical damage, and eventually to cardiac disease. Of greater clinical importance is the observation that this augmented LPL can persist even in a setting of normoglycemia, providing excessive FA to the heart with deleterious consequences over the long term. Success of our research should allow the identification of novel targets for therapeutic intervention and prevention of altered metabolic processes that initiate and sustain heart failure during diabetes.

# AFPC/Bristol-Myers Squibb National Award For Excellence In Education



**Jean-Louis Brazier,** PhD
Professor, Faculté de pharmacie, Université de Montréal

A tenured professor at the Faculté de pharmacie of the Université de Montréal, Jean-Louis Brazier has a diploma in pharmaceutical studies and chemistry from the université Claude Bernard in Lyon (France), and a PhD in pharmaceutical studies from the same university. He was engaged as a professor-researcher in the Faculté de pharmacie at université Claude Bernard from 1970 to 1997 and was director of the Institut de Pharmacie Industrielle from 1989 to 1995. In 1997, he joined the Faculté de pharmacie of the Université de Montréal where he is responsible for teaching pharmacokinetics, phytochemistry and phytopharmacology as well as a multidisciplinary course. He is a member of several committees concerned with pedagogy and the evaluation of teaching. He currently serves as president of the committee for computer applications, whose goal among others is greater use of information and communication technologies (ICT) in the faculty and effective integration of those technologies in the teaching process. He sits on the committee responsible for revamping the program in pharmaceutical studies and the transitional program that leads from the undergraduate program to PharmD. Professor Brazier has also undertaken pedagogical innovation projects at the Faculté de l'éducation permanente (the development of an interactive distance course including a book and a CD-Rom). In addition, he has acted as a resource person to CEFES (the center for studies and teacher training in higher education) since the time it was set up, and has himself given a certain number of workshops and training sessions offered by the center. He is particularly interested in the methodology of teaching large groups and in the use of interactive instructional techniques with such groups. A second area of interest concerns reflective teaching and the development of methods for determining student levels at the beginning of a program and for providing upgrading in order to ensure greater homogeneity in large groups. Development in these areas was made possible by CEFES funds, which are awarded to individuals on a competitive basis. CEFES funding was granted a second time for the development of a distance course in biopharmaceutics and pharmacokinetics (PHM6506D) intended as a professional upgrading course for pharmacists. Jean-Louis Brazier has the distinction of having been elected "professor of the year" for the last six years by the students in the pharmacy program at the University of Montreal.
In 2000 and 2002, he received the Prix Servier-Canada, an award given for excellence in teaching in pharmacology. In 2002, he was named "Pharmacist de coeur et d'action en enseignement", an honour bestowed on an individual for dynamic teaching performance in the area of pharmacy studies. In 2003, he was awarded the Prix du Ministre de l'Éducation du Québec for his contribution to teaching methodology with his "Notes de cours interactives" (interactive course notes).

**Abstract**

The key to success in interacting with students in large groups is to replace the sensation of being in a large group by one of being in a one-to-one relationship. A student has to feel that the professor is teaching him or her individually and not the whole group. That means that the professor must make sure the course is interactive and that during the course there is perfect synchronization between what is said, what is seen and what is done according to the credo "I hear and I forget; I see and I remember, I do and I understand." It's not enough, though, to stop at technique. The teacher must also attend to the affective dimension. If doing so is relatively easy with small groups, it quickly becomes more difficult as numbers increase.

The aim of the presentation is to show how to create a climate of confidence in large groups from the first class meeting and how to maintain that confidence throughout the course. Establishing and sustaining confidence is essential to emotional wellbeing in the classroom. First, "Interactive course notes" methods will be explained and, as well, diverse instructional tools: a pharmacopoeia for obtaining results from doses of interactivity, interactive tools and diffusion by Intranet. Next, the notions of interactivity and synchronization will be illustrated. Finally, role playing will be featured, with a focus on how it allows for a pleasing amalgamation of multidisciplinary integration, emotional and affective factors, development of personal talent as well as pleasure in learning, all aspects which make teaching one of the finest and most enjoyable professions in the world.

# AFPC/AstraZeneca Pharma New Investigator Research Award

**Pierre Moreau,** BPharm, PhD
Associate Professor, Faculté de pharmacie, Université de Montréal

Montreal born Dr. Pierre Moreau obtained his BPharm degree from Université de Montréal (UdeM) in 1988, finishing head of the class. Over the next five years, working part time as a pharmacist, he undertook graduate studies in pharmaceutical sciences (pharmacology option) under the supervision of Dr. Nobuharu Yamaguchi from the Faculty of Pharmacy (UdeM) and Dr. Jacques de Champlain from the Department of Physiology (UdeM) in the area of experimental hypertension research. In September 1993, Dr. Moreau started a research postdoctoral fellowship under the guidance of Thomas F. Lüscher, a cardiologist doing fundamental research in Berne, Switzerland, where he learned the complexity of vascular biology, including the paramount influence of the endothelium and its released factors. He finished his training in molecular medicine in the laboratory of Pavel Hamet at Hôtel-Dieu Hospital in Montréal from January 1996 to June 1997. Dr. Moreau was involved mainly in the understanding of cellular turnover (cell proliferation and apoptosis) in the developing hypertensive cardiovascular system.

Dr. Moreau began independent research activities in 1997 at the Faculty of Pharmacy (UdeM) with the central theme of endothelial modulation of vascular remodeling. His research program is funded by the CIHR and the Heart & Stroke Foundation of Canada. He also collaborates with the pharmaceutical industry. During the last 7 years, Dr. Moreau received scholarships from the FRSQ and the CIHR and received young investigator awards from the Société québécoise d'hypertension artérielle and the Canadian Hypertension Society. He also received three teaching awards from the Faculty of Pharmacy. He recognizes the contributions of a senior technician and sixteen graduate students/ post-doctoral fellows that he has supervised or is currently supervising. They have had a major impact on his career, contributing in part to a total of 66 manuscripts, 6 book chapters and 183 abstracts over the course of his research career. Dr. Pierre Moreau is currently Associate Professor in the Faculté de pharmacie, Université de Montréal.

**Abstract:** Our ultimate objective is to identify therapeutic targets that would allow the regression of hypertension-induced alterations of the vasculature. Indeed, the structure of the arteries is modified in hypertension and this process appears to limit blood supply in periods of enhanced demands, leading to end organ damage. Thus, our goal is not to develop new antihypertensives to lower arterial pressure, but to devise adjunct therapies to reduce morbidity and mortality associated with chronic hypertension. Although we have tackled several experimental paradigms, our latest efforts have been concerned with medial arterial calcification. While we age, calcium accumulates in the vascular wall of large arteries, leading to extracellular matrix disruption and progressive stiffening. Large artery stiffness has a significant impact on hemodynamic parameters, leading to an increase of pulse pressure, a characteristic of isolated systolic hypertension (ISH). This condition is now recognized as a major health problem, especially in the context of the aging population. We have developed an experimental model of ISH to study calcification and found that, in contrast to the general belief that it is an irreversible condition, some pharmacological agents can induce mineral loss in the vascular wall. We are currently studying mechanisms related to this regression in an effort to identify molecular targets that could be of therapeutic benefit for this rapidly growing number of patients.

# AFPC/Janssen-Ortho Pharmaceutical Research Award

**John H. McNeill,** PhD, Diabetes and Cardiovascular Disease
Professor Emeritus, Faculty of Pharmaceutical Sciences, University of British Columbia

Dr. John McNeill received his BSc(Pharm) and MSc from the Faculty of Pharmacy University of Alberta in 1960 and 1962. He taught at the College of Pharmacy, Dalhousie University for one year before entering the PhD program at the Department of Pharmacology University of Michigan where he completed his degree in 1967. He joined the College of Medicine, Michigan State University as an Assistant Professor of pharmacology before returning to Canada in 1971 to the Faculty of Pharmaceutical Sciences at UBC. Subsequently he achieved Full Professorship and served as Associate Dean for 6 years followed by nearly 12 years as Dean before returning to full time teaching and research in 1996. His lab was one of the first to investigate the mechanisms underlying diabetic cardiomyopathy and his observation that vanadate treatment prevented the onset of the diabetic cardiomyopathy set the stage for his subsequent research on vanadium as a treatment for diabetes. His latest interest is in the role of insulin resistance in experimental hypertension. A major focus in Dr. McNeill's career has been the training of graduate students and postdoctoral fellows. He has trained more than 20 postdoctoral fellows, and forty graduate students and has had 10 visiting professors spend time in his lab. His work, more than 900 manuscripts, abstracts and review articles, has been cited more than 6200 times. He was elected to the Royal Society of Canada and the International Academy of Cardiovascular Sciences. Dr. McNeill has received a number of awards for his work including the McNeil Award (AFPC), the Upjohn Award (PSC), the Bowman Award (International Academy of Cardiovascular Sciences) and the Biely Award and Killam Prize from UBC. Dr. McNeill has chaired grant committees for MRC, Heart & Stroke Foundation of Canada, Canadian Diabetes Association and the Rx&D Health Research Foundation and served on numerous editorial boards. He was President of the Pharmacological Society of Canada, the Western Pharmacology Society, the Association of Deans of Pharmacy, the Canadian Council on Animal Care and the Canadian Foundation for Pharmacy. He is also an outstanding teacher, having won the Killam Teaching Prize at UBC.

**Abstract**

In the late 1970s, it became known that most diabetics died from cardiovascular problems and there were indications that, in addition to coronary artery disease and strokes, other factors were involved. We began to investigate diabetes-induced cardiomyopathy, a muscle disease that is now known to contribute to congestive failure and post myocardial infarction morbidity in diabetic patients. Using streptozotocin-induced Type 1 diabetic rats, we investigated the pathophysiology, biochemistry, pharmacology and histology of the disease process. Diabetes caused marked disturbances in $Ca^{++}$ handling in the heart, and had effects on contractile proteins accompanied by a shift to lipid metabolism. Several drug treatments were successful in improving function, particularly agents which improved the diabetic state (insulin, metformin). Inorganic vanadyl or vanadate salts and two organic vanadium compounds [bismaltolato-oxovanadium IV (BMOV) and its ethyl maltol derivative (BEOV)] proved to be very successful in preventing the secondary complications of diabetes in both Type 1 and Type 2 models of the disease. Vanadium compounds appear to work by enhancing the effects of insulin on insulin signalling pathways increasing glycogen formation and decreasing gluconeogenesis. We have also used these compounds to study the relationship between insulin resistance and hypertension. Rats are fed a high fructose diet and subsequently become insulin resistant, hyperinsulinemic and hypertensive. The model has similarities to the "Metabolic Syndrome" in humans. We have shown that insulin enhancers prevent the development of this type of hypertension. The increased blood pressure is also prevented by sympathectomy, endothelin-1 blockade, angiotensin blockers and thromboxane synthase inhibitors. Sex hormones are also involved. These data provide an insight into the causes of the hypertension and will be discussed. (Supported by the B.C. and Yukon Heart & Stroke Foundation, MRC, CIHR, CDA and NSERC.)

# Section 4:

# Teacher's Conference I:
# "The Scholarship of University Teaching and Learning"

**Friday, June 11, 2004**
**8:00 am – 12:00 pm**
**Grand Ballroom B**

# Teacher's Conference I:
# "The Scholarship of University Teaching and Learning"

## WHAT IS THE SCHOLARSHIP OF UNIVERSITY TEACHING?

Presented by: ***Richard Kennedy***, University of Arkansas

The continual evolution of the practice of pharmacy, which is driven by rapid advances in scientific knowledge as well as changes in health care delivery, require that academicians develop effective new methods of teaching and assessment, which are shared via peer-reviewed communications. This presentation is designed to define the scholarship of teaching and discuss its importance to pharmacy education. It will begin with a brief definition of scholarship in general and a discussion of the academic culture required to develop and sustain a productive scholarly program. The presentation will then focus on defining the scholarship of teaching – what it is and what it is not. The importance of this type of scholarship will be discussed with emphasis on the need for new methods of teaching, learning and curricular/outcomes assessment. Issues related to assessing the scholarship of teaching and its recognition as compared to other types of scholarship will be summarized. Time will be left for active discussion after the presentation.

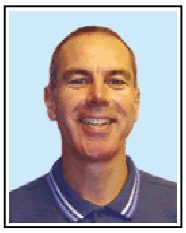
**Richard H. Kennedy,** PhD
Chair of Pharmaceutical Sciences
Dean of the Graduate School at the University of Arkansas for Medical Sciences (UAMS)

Richard H. Kennedy, PhD, received a BS in pharmacy from St. Louis College of Pharmacy in 1975, his PhD from the University of Nebraska Medical Center in 1981 and postdoctoral training in the Department of Pharmacology & Toxicology at Michigan State University between 1981 and 1983. Dr. Kennedy rose through the academic ranks at UAMS from Instructor to Full Professor in the Department of Pharmacology & Toxicology between 1983 and 1997. In 1998, he assumed the chairmanship of the Department of Pharmaceutical Sciences at UAMS, and in 2002 he became Dean of the UAMS Graduate School, which administers graduate programs for the Colleges of Pharmacy, Nursing, Medicine, and Health Related Professions. He currently teaches autonomic and cardiovascular pharmacology in the medical course and biochemistry in the pharmacy curriculum. His research in cardiovascular pharmacology and pathophysiology has resulted in more than 90 peer-reviewed manuscripts and has been funded by a variety of agencies including NIH, the American Heart Association, the National Collegiate Athletic Association, the Office of Naval Research, the U.S. Air Force and the Environmental Protection Agency (EPA). Ongoing projects include studies on hyperhomocysteinemia-associated cardiac dysfunction, gender differences in cardiac aging, cardiac actions of cytokines, the role of mast cells in cardiac structure/function and an EPA-EPSCoR program designed to enhance toxicology research in Arkansas. His interest in the scholarship of university teaching stems not from active participation, but rather from a concern that rapidly occurring changes in the pharmacy profession will necessitate the development of effective new methods of teaching and outcomes assessment, which are shared via peer-reviewed communications.

## DEVELOPING SCHOLARLY APPROACHES TO TEACHING AND LEARNING: THEORY-PRACTICE IMPLICATIONS

Workshop facilitator: ***Harry Hubball***, University of British Columbia

There is a growing recognition of the complexity of academic work and the need for university faculty to develop a scholarly approach to teaching and learning. The scholarship of teaching and learning was first introduced by Ernest Boyer, in the early 1990's. At the very heart of this process is an approach to academic work that integrates research, teaching, and student learning. Essentially, a scholarly approach to teaching and learning can engage faculty at all ranks to reflect on and initiate positive changes to curricula and pedagogical practices. Recent attention in the higher education literature has provided greater clarity with respect to the theoretical concepts, principles, research and practice implications related to the scholarship of teaching and learning. This interactive workshop will engage participants in the process of developing scholarly approaches to teaching and learning as well as the theory-practice implications. Data will be presented from experiences with over one hundred cross-disciplinary faculty members from various academic ranks in the *Faculty Certificate Program on Teaching and Learning in Higher Education* at the University of British Columbia.



**Harry Hubball,** PhD
Assistant Professor, Department of Curriculum Studies
Faculty of Education, University of British Columbia (UBC)

Dr. Harry Hubball has been an Assistant Professor in the UBC Faculty of Education for four years. Dr. Hubball's research interests focus on curriculum development and pedagogy in university and school contexts. He teaches undergraduate and post-graduate students in the areas of Physical, Health and Outdoor Environmental Education. Dr. Hubball has assisted multidisciplinary units across campus with analysis of needs, curriculum re-design, and a wide range of professional development workshops for Faculty members. In 1998, he developed the *UBC Faculty Certificate Program on Teaching and Learning in Higher Education* to enhance the scholarship of teaching and learning at UBC. Dr. Hubball is currently Co-Chair of this program and has been appointed to the National Executive Committees for the Society for Teaching and Learning in Higher Education and the Canadian Association for Health, Physical Education, Recreation and Dance. Dr. Hubball is the recipient of the 2004 UBC Killam Teaching Award for the Faculty of Education. He has published many articles in his field and presented his scholarship extensively at local, national and international conferences.

## IS ANYONE LISTENING? IMPLICATIONS FOR RECOGNITION, TENURE AND PROMOTION.

Panelists: ***Neil Guppy***, Associate VP Academic, University of British Columbia; ***Wayne Hindmarsh***, Dean, University of Toronto; ***Jacques Turgeon***, Dean, University of Montréal

Consistent with the development of educational outcomes-based pharmacy programs in Canadian universities, faculty members are engaged in the re-examination and re-design of undergraduate-level curricula. In order to meet the diverse needs and circumstances of the health care system, current and future pharmacy professionals and a changing society, faculty members have recognized that development and delivery of effective outcomes-based educational programs that positively impact student learning requires a level of study, experimentation and engagement not unlike more traditional forms of scholarly activity. While debate continues regarding the value and importance of teaching and learning work to an academic's career, faculty members are questioning whether the efforts required in the teaching arena are worthwhile or recognized. Is anyone listening? How are universities and pharmacy faculties responding to this emerging form of scholarship? What are the implications of this work in decisions of merit, tenure and promotion? What evidence is being used to evaluate the scholarship of teaching in these decisions? This panel of experienced university administrators and Deans will explore these questions to provide a sense of "where we are" regarding this important issue.

**Neil Guppy,** PhD
Associate Vice President (Academic Programs)
University of British Columbia (UBC)

Neil Guppy was born in North Bay, Ontario. He attended university in Ontario, both at Queen's University (in Physical and Health Education) and the University of Waterloo, receiving his PhD in Sociology in 1981. His first academic job was at the UBC where he started in the Department of Anthropology and Sociology in 1979. He has served as an Associate Dean (Students) in the Faculty of Arts, and since 1999 has been the Associate Vice President (Academic Programs) at UBC. His research interests are in the areas of social inequality, education, research methodology, and the environment/resources. His most recent books include *Education in Canada: Recent Trends and Future Challenges* (1998, with Scott Davies), a third edition of *Successful Surveys: Research Methods and Practice* (2003, with George Gray), and a fourth edition of *Social Inequality in Canada: Patterns, Problems, and Policies* (2003, edited with Jim Curtis and Ed Grabb). In 1988-89 he won a University Killam Research Award at UBC and in 1992-93 he was awarded a University Killam Teaching Prize. He is the past editor of the Sage Series in International Sociology (London, England) and was a member of the Publication Board of the International Sociological Association from 1994-1999.

**K. Wayne Hindmarsh,** PhD
Dean & Professor
Leslie Dan Faculty of Pharmacy, University of Toronto

Wayne is currently Dean and Professor of the Leslie Dan Faculty of Pharmacy at the University of Toronto, a position he has held since August 1998. Previously, he was Dean of Pharmacy at the University of Manitoba and Assistant Dean at the College of Pharmacy and Nutrition at the University of Saskatchewan. He obtained his bachelor of science in pharmacy and MSc degree from the University of Saskatchewan and a PhD from the University of Alberta. His research accomplishments include over 80 manuscripts related to drug distribution and forensic toxicology. He is also author to two books dealing with drug related topics: Drugs: What your Kid Should Know and Too Cool for Drugs (a book aimed at primary school age children dealing with peer pressure and the problem of drug use). He recently received the Douglas M. Lucas Award in recognition of excellence in Forensic Science. Dr. Hindmarsh has been a frequent speaker, giving over 200 lectures on research interests related to drug use

and abuse with particular emphasis on their health effects and prevalence statistics. Previous employment included doing 'quincy-type or CSI type' work for the RCM Police Forensic Laboratories.

Wayne is a past president of AFPC and chairman of the Association of Deans of Pharmacy of Canada and served two terms as president of the Canadian Council for Accreditation of Pharmacy Programs.

**Jacques Turgeon,** BPharm, PhD
Dean & Professor
Faculté de pharmacie, Université de Montréal

Jacques Turgeon was appointed Dean of the Faculté de pharmacie, Université de Montréal on June 1st, 2000. He received his Bachelor degree in Pharmacy in 1983 from Laval University in Quebec City followed by an MSc degree in pharmacokinetics and a PhD degree in drug metabolism from the same institution in 1985 and 1988, respectively. He completed post-doctoral studies from 1988 to 1990 in the department of Clinical Pharmacology, Vanderbilt University in Nashville, USA, under the supervision of Dr. Dan M. Roden. He joined the Faculty of Pharmacy of Laval University in 1990 as an assistant professor. He was promoted to the rank of Associate Professor in 1993 and Full Professor in 1998. From March 1999 to May 2000, he was Senior Director of the Pharmacokinetics department at Phoenix International Life Sciences.

Research interests of Dr. Turgeon have always been directed towards the study of factors responsible for intersubject variability in drug response. More specifically, he has developed expertise in the role of pharmacogenetics in cardiovascular drug actions. Among his favorite topics were the study of drug-drug interactions leading to pharmacodynamics modulation of antiarrhythmic drug action. Dr. Turgeon has integrated in his research approaches *in vitro* (patch-clamp technique, *in vitro* metabolism and molecular biology) models as well as designed and performed studies in healthy volunteers and patients. He has published more than 75 referred articles and more than 185 abstracts. Dr. Turgeon has received numerous prizes for his research activities as well as recognition by the students for his teaching skills. He is a member of numerous societies and has been acting on the committees of several granting agencies for several years. He has been the Director of the Quebec Cardiovascular Network of the FRSQ and the Research Director of the Quebec Heart Institute, Laval Hospital.

# Section 5:

# AFPC Poster Session

**Friday, June 11, 2004**
**7:30 am – 5:00 pm**
**Grand Ballrooms C & D**

Author presentations: 12:00 pm – 1:30 pm

# List of Abstracts and Location

## BASIC RESEARCH

**BasicRes No. 1**: ABC transporters as a key determinant of sex-related differences in drug-induced Long QT syndrome, ***Pierre Morissette***, Jacques Turgeon, Faculte de pharmacie, Universite de Montreal

**BasicRes No. 2**: The effect of modulating glucuronidation on VPA-associated 8-iso-prostaglandin $F_{2\alpha}$ levels in rats, ***Vincent Tong***, Xiaowei Teng, Thomas K.H. Chang and Frank S. Abbott, Faculty of Pharmaceutical Sciences, University of British Columbia

**BasicRes No. 3**: Postnatal maturation of cytochrome P450 2E1 and glutathione-S-transferases, pharmacokinetic model validation, ***Fawzy A. Elbarbry,*** Jane Alcorn, College of Pharmacy and Nutrition, University of Saskatchewan

**BasicRes No. 4**: Heat treated fungizone® (HFZ) maintains amphotericin B's (AmB) antifungal activity while decreasing its renal cytotoxicity: role of fungal phospholipases, ***Erin Chew***, Stephen D. Lee, Nancy S. Chung and Kishor M. Wasan, Faculty of Pharmaceutical Sciences, University of British Columbia.

**BasicRes No. 5**: Changes in gene expression of natriuretic peptides and myosin heavy chain isoforms in cardiomyopathic hamsters after treatment with growth hormone, ***Mukandila Mulumba***, Huy Ong and Sylvie Marleau, Faculty of Pharmacy, Université de Montréal

**BasicRes No. 6**: Mechanisms involved in the modulation of aryl hydrocarbon receptor-regulated genes by tumor necrosis factor-$\alpha$ and lipopolysaccharide, ***Negar Gharavi*** and Ayman O.S. El-Kadi, Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta

**BasicRes No. 7**: Cytokine-mediated regulation of the rat mdr1b promoter in Huh7 hepatoma cells, ***Emmanuel Ho*** and Micheline Piquette-Miller, Department of Pharmaceutical Sciences, University of Toronto

**BasicRes No. 8**: Effect of warfarin on haloperidol lipoprotein and protein association within normolipidemic and hyperlipidemic human plasma, ***Tiffany Ho*** [1], Ric M. Procyshyn[1,2] and Kishor M. Wasan[1], [1]Faculty of Pharmaceutical Sciences, The University of British Columbia

**BasicRes No. 9**: Electrophysiological characterization of mutations found in the gene *Kv1.5* in patients with different forms of atrial fibrillation, ***Isabelle Plante***[1], Dominique Fournier[1], Chantal Guillemette[2], Gilles O'Hara[1], Jean Champagne[1], Patrick Mathieu[1], Richard Baillot[1], Pascal Daleau[1,2]. [1]Quebec Heart Institute, Laval Hospital, [2]Faculty of Pharmacy, Laval University

**BasicRes No. 10**: Study on the correlation of drug dissolution and polymer swelling from a matrix tablet using texture analyzer, ***Hongtao Li***, Xiaochen Gu, Faculty of Pharmacy, University of Manitoba

**BasicRes No. 11**: Pharmacokinetic study of methotrexate loaded poly(L-lactic acid) microspheres following intra-articular injection in rabbits, ***Linda Liang,*** Wesley Wong, and Helen Burt, Faculty of Pharmaceutical Sciences, University of British Columbia

**BasicRes No. 12**: In vitro and in vivo percutaneous permeation of insect repellent N, N-Diethyl-m-toluamide (DEET) and sunscreen oxybenzone, ***Sreeneeranj Kasichayanula***, Xiaochen Gu, Faculty of Pharmacy, University of Manitoba

**BasicRes No. 13**: 3-Hydroxy- 4,9-dihydro-isothiazolo[5,4-*b*]quinoline-4-ones as topo-II inhibitors with antitumor activity, ***Zohreh Amoozgar*** and Mohsen Daneshtalab, School of Pharmacy, Memorial University of Newfoundland

## CLINICAL RESEARCH

**ClinRes No. 1**: Optimizing care of diabetes patients with Ischemic heart disease at Burnaby Hospital, ***Wendy A. Leong***,*† Lorna S. Leckie,† Marshall Dahl,*† Burnaby Hospital;† University of British Columbia*

**ClinRes No. 2**: Validation of logistic regression models for the development of thrombocytopenia in critical care patients. ***Arun K. Verma***[1]; Marc Levine[1,2]; Stephen J. Shalansky[1,3]; John J. Spinelli[4] and Peter M. Dodek[5]. [1]Faculty of Pharmaceutical Sciences, University of British Columbia; [2]Children's & Women's Health Centre of B.C.; [3]Pharmacy Department, St. Paul's Hospital; [4]B.C. Cancer Agency; [5]Critical Care Medicine, St. Paul's Hospital and the University of British Columbia

**ClinRes No. 3:** Phenotypic strategies, a better approach for individualized warfarin therapy ***Véronique Michaud,*** Denis Brouillette, Denis Roy, Lucie Verret, Nicolas Noel, Isabelle Taillon, Gilles O'Hara, Denis Gossard, Monique Champagne, Marie-Claude Vanier, Jacques Turgeon. Faculté de pharmacie, Université de Montréal, Institut de cardiologie de Montréal, Institut de cardiologie de Québec, Hôpital Haut-Richelieu, Hôpital Maisonneuve-Rosemont, Xanthus Life Sciences

**ClinRes No. 4**: Evaluation of mitoxantrone in secondary progressive multiple sclerosis (SPMS), ***M. Namaka***, M. Melanson, J. Major, MNL. Klassen, S. Slobodian, D Ruhlen. Faculty of Pharmacy, University of Manitoba

**ClinRes No. 5**: A novel genotyping algorithm for the CYP2D6*10 allele in Asians using real-time rapid-cycle PCR and multiplex PCR, ***Evan H. Kwong***[1], Marc Levine[1], Carolyne J. Montgomery[2], and Thomas K.H. Chang[1] , [1]Faculty of Pharmaceutical Sciences, University of British Columbia, [2]Department of Anesthesiology, Children's and Women's Health Centre of British Columbia

## EDUCATIONAL AND TEACHING RESEARCH

**Edu/Teach No. 1**: Anticoagulation training and certification in Canada. ***Wendy A. Leong*** and The Anticoagulation Resource Team, Burnaby Research & University of British Columbia

**Edu/Teach No. 2**: Self-care Curriculum Revitalized: The Experience Within University of Toronto's International Pharmacy Graduate Program. ***Janet Sio,*** *Diem Cong* & Karen Elaine Edge. International Pharmacy Graduate Program, Faculty of Pharmacy, University of Toronto

**Edu/Teach No. 3**: Electronic portfolios: a novel approach for assessing learning outcomes. ***Ingrid V. Price,*** Jennifer A. Shabbits, Marion L. Pearson, Lynda M. Eccott. Faculty of Pharmaceutical Sciences, University of British Columbia

**Edu/Teach No. 4**: Investigating the 'Future' of Pharmacy: the professional maturation and training of nascent pharmacists at one Canadian faculty of pharmacy. ***Jennifer D. Beales*** and Zubin Austin, Leslie Dan Faculty of Pharmacy

**Edu/Teach No. 5**: Investigating socio-cultural awareness in pharmacy curricula: The role of case examples. ***Jennifer D. Beales,*** Leslie Dan Faculty of Pharmacy, University of Toronto ** withdrawn **

**Edu/Teach No. 6**: Evaluating First Year CAPS-I – Cases in Pharmaceutical Sciences: Educational successes and challenges. ***Ingrid Price***. Faculty of Pharmaceutical Sciences, University of British Columbia

**Edu/Teach No**. **7**: Characterization and analysis of direct observation forms completed by preceptors during final year pharmacy experiential rotations. ***Andrea J. Cameron,*** Lesley A. Lavack. Leslie Dan Faculty of Pharmacy, University of Toronto

**Edu/Teach No. 8:** Experiences with collaborative practice among pharmacy and nutrition students assessing a standardized patient. ***Roy Dobson***; Jeff Taylor; Jane Cassidy; Doreen Walker. College of Pharmacy and Nutrition, University of Saskatchewan

**Edu/Teach No. 9**: Feasibility of a web-based therapeutics course – a pilot evaluation**.** ***Heather R Kertland***,[1,2] Natalie R Kennie,[1,2] Lori A May,[1] Thomas ER Brown [1,3]. Leslie Dan Faculty of Pharmacy, University of Toronto[1], St Michael's Hospital[2], Sunnybrook and Women's College Health Science Centre[3]

**Edu/Teach No. 10**: Pilot trial of online training of evidence-based practice within the pharmacy curriculum at the Université de Montréal. ***Geneviève Gauthier***,[1] Daniel J. G. Thirion,[2] Marie-France Beauchesne,[2] Lucie Blais,[2] and Claudine Laurier.[2] 1. Department of Educational Psychology, McGill University. 2. Faculté de pharmacie, Université de Montréal

**Edu/Teach No. 11**: Re-structuring of pathophysiology and therapeutics in the Doctor of Pharmacy program. ***Thomas ER Brown[1]***, Clarence Chant[2], Artemis Diamantorous[1], Linda D Dresser[3], Heather R Kertland[2], Debora W Kwan[4]. Leslie Dan Faculty of Pharmacy University of Toronto, Sunnybrook and Women's College Health Science Centre[1], St Michael's Hospital[2], Mount Sinai Hospital[3], University Health Network[4]

**Edu/Teach No. 12**: Development of a first year community practice experiential program. ***Debra M. Moy***, Michael R. Heffer. Leslie Dan Faculty of Pharmacy, University of Toronto

**Edu/Teach No. 13**: An objective competency level-based method to assess student performance in experiential training. ***Christopher J. Turner***, Ralph Altiere, Larry Clark, Carrie Maffeo and Connie Valdez. University of Colorado Health Sciences Center School of Pharmacy

**Edu/Teach No. 14**: The integrated laboratory network pilot project: a virtual approach to teaching pharmaceutical analysis. ***Simon P. Albon[1]***, Devon A. Cancilla[2], [1]Faculty of Pharmaceutical Sciences, University of British Columbia, [2]Scientific Technical Services, Western Washington University.

**Edu/Teach No. 15**: An interfaculty pain curriculum for health professional students: an evaluation. ***Lalitha Raman-Wilms[1]***, Judith Hunter[2] , Judy Watt-Watson[4], Leila Lax[3], Glenn Regehr[3], Larry Librach[3], Peter Pennefather[1]. [1]Leslie Dan Faculty of Pharmacy, [2]Department of Physical Therapy, [3]Faculty of Medicine, [4]Faculty of Nursing, University of Toronto

## PHARMACY PRACTICE RESEARCH

**PPR No. 1**: Evaluation of pharmacist practice in an interdisciplinary primary care team**-**based setting: Implications for pharmacy education. ***Jana M. Bajcar[1,2]*** Natalie Kennie[1,2] , Tom Einarson[1]. 1. Leslie Dan Faculty of Pharmacy, University of Toronto and 2. Department of Family and Community Medicine, St. Michael's Hospital

**PPR No. 2**: Involvement of a community pharmacist research network in evaluating outcomes of bisphosphonate therapy. ***Judith A. Soon***, Mary H.H. Ensom, D.W. Fielding, Marc Levine, James P. McCormack, Selena M. Santi. Collaboration for Outcomes Research and Evaluation ($COR_xE$), Faculty of Pharmaceutical Sciences, University of British Columbia

**PPR No. 3**: Drug utilization review (DUR) for the treatment of asthma. Joëlle Mimeault, ***Diane Blais***. Conseil du médicament, Direction du suivi et de l'utilisation optimale

**PPR No. 4**: The provision and reimbursement of home care services by community pharmacists in Canada. ***Jennifer Alissa Lawrence*** [1] and A. Kirsten Woodend [2]. [1]University of Saskatchewan, [2]Director, Research, CPhA

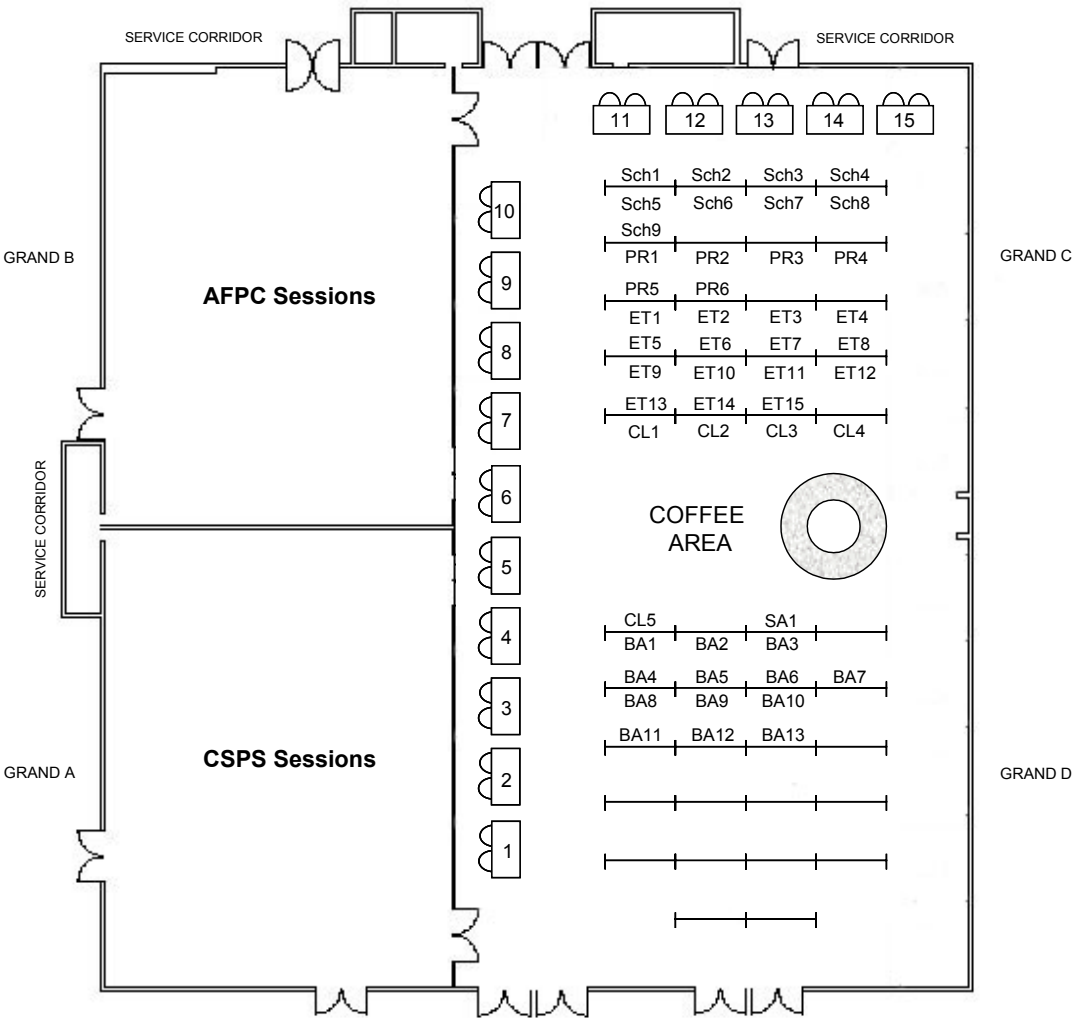
**PPR No. 5**: Pictographic instructions for medications: Do other cultures interpret them accurately? ***Zahra Sadikali***[1], LCol Régis Vaillancourt[2], John B. Collins[3], Rosemin Kassam[1]. [1]Faculty of Pharmaceutical Sciences, University of British Columbia; [2]Directorate of Medical Policy, Pharmacy Policy and Standards, The Canadian Forces; [3]Department of Education Studies, University of British Columbia

**PPR No. 6**: Community-based warfarin co-prescribing and point of care INR testing. ***Wendy A. Leong***,* and London Drugs Anticoagulation Team[#] {Jenny Chiang, Daniel Choi, Nelson Costa, Sanja Ivankovic, Allen Jang, Cecilia Lee, Winnie Lee, Joyce Tan, Robert Tong, John Tse, Annie Wang, Grace Yeung, },[#] Burnaby Research* & University of British Columbia*

## SOCIAL AND ADMINISTRATIVE RESEARCH

**Soc Admin No. 1**: Hot on the Net: pharmaceutical policy/PDAs, ***Timothy Rees*** and Elizabeth Foy, College of Pharmacy, Dalhousie University

# AFPC Conference 2004 Poster Session Floor Plan




## School Posters

| | |
|---|---|
| Sch1 | British Columbia |
| Sch2 | Alberta |
| Sch3 | Saskatchewan |
| Sch4 | Manitoba |
| Sch5 | Toronto |
| Sch6 | Montreal |
| Sch7 | Laval |
| Sch8 | Dalhousie |
| Sch9 | Memorial |

## Research Posters

Basic Research
BA1-BA13

Clinical Research
CL1-CL5

Education & Teaching Research
ET1-ET15

Pharmacy Practice Research
PR1-PR6

Social & Administrative Research
SA1

## Exhibitors

Booths 1-15

# BASIC RESEARCH

**BasicRes No. 1: ABC transporters as a key determinant of sex-related differences in drug-induced Long QT syndrome**

*Pierre Morissette*, Jacques Turgeon

Faculté de pharmacie, Universite de Montreal

Sex-related differences in drug-induced Long QT syndrome are well recognized. Recently, our laboratory has demonstrated that ATP binding cassette (ABC) membrane transporters play a key role in the regulation of intracellular drug accumulation and cardiac toxicity. Purpose: 1) To determine whether an ABC transporter modulator can alter the effects of $I_{Kr}$ blockers on cardiac repolarization, and 2) To determine if these effects are modulated by gender. ABC transporter activity was modulated by pre-treating male and female guinea-pigs (n=96) for 5 days with verapamil (1.5 to 15 mg/kg/day), prior to EP studies. Duration of monophasic action potential duration measured at 90% repolarization ($MAPD_{90}$) was evaluated at baseline and following a 5 minute perfusion period with cisapride (50 nM). Intracellular cisapride concentrations were evaluated in myocytes of pre-treated animals using an HPLC method. At a basic cycle length of 250 msec, $MAPD_{90}$ was prolonged by cisapride $17\pm5$ msec in male but $22\pm6$ msec in female hearts from vehicle pre-treated animals. In contrast, a much greater increase in $MAPD_{90}$ was noticed in hearts isolated from animals pre-treated with verapamil (11.6 mg/kg/day). Indeed, $MAPD_{90}$ was prolonged $28\pm9$ msec in male but $48\pm9$ msec in female hearts ($p<0.05$). Additional experiments were conducted to demonstrate an increase in intracellular concentrations of cisapride in pre-treated animals. Cisapride concentrations were $12\pm4$ and $14\pm3$ ng/mg protein in control male and female hearts, respectively. Much higher concentrations of cisapride were observed in hearts from animals pre-treated with verapamil (11.6 mg/kg/day): intracellular concentrations were $22\pm4$ and $30\pm4$ ng/mg protein, respectively ($p<0.05$). This study demonstrates that ABC membrane transporter activity modulates $I_{Kr}$ block by non-antiarrhythmic agents such as cisapride. We identify for the first time ABC transporters as a key determinant of mechanisms underlying sex-related differences in drug-induced Long QT syndrome.

**BasicRes No. 2: The effect of modulating glucuronidation on VPA-associated 8-iso-prostaglandin $F_{2\alpha}$ levels in rats.**

*Vincent Tong*, Xiaowei Teng, Thomas K.H. Chang and Frank S. Abbott

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Increased production of reactive oxygen species (ROS) has been associated with valproic acid (VPA) treatment and studies are ongoing to examine the relationship between VPA biotransformation and oxidative stress.

**Objectives.** (A) To biosynthesize VPA-1-*O*-acyl glucuronide (VPA-G) and to develop a quantitative LC/MS assay for VPA-G in rat liver. (B) To investigate the effect of modulating VPA-G formation, the major VPA biotransformation pathway, on ROS production in rats.
**Methods.** Urethane anesthetized male Sprague Dawley rats were administered intraperitoneally with VPA or $[^2H_6]$-VPA. VPA-G and $[^2H_6]$-VPA-G were extracted and purified from bile by HPLC. A quantitative LC/MS method was developed and validated for the determination of VPA-G from liver homogenates. To modulate VPA-glucuronidation pathway, rats (n=8/group) were pretreated with [(1S)-*endo*]-(-)-borneol (1mmol/kg, i.p.) at 0.5 hr prior to VPA treatment (500mg/kg, i.p.). VPA-G levels were determined by LC/MS and oxidative stress was measured by 8-iso-prostaglandin $F_{2\alpha}$ levels using an EIA method.
**Results.** The identities of VPA-G and $[^2H_6]$-VPA-G were confirmed by NMR and mass spectrometry. The LC/MS method using negative electrospray ionization was linear over the range 0.5-50 μg/mL. Intra- and inter-assay validation results indicated that the accuracy and precision was $<$ 15 % bias and 15% C.V. (n=5 days). (-)-Borneol pretreatment reduced the levels of VPA-G by $\approx$ 90% compared to animals treated with VPA alone. Furthermore, plasma levels of 8-iso-prostaglandin $F_{2\alpha}$ were found to be reduced from $93\pm8$ pg/mL to $60\pm4$ pg/mL in (-)-Borneol and VPA treated animals compared to VPA treated animals alone.
**Conclusion.** (-)-Borneol pretreatment significantly inhibited VPA-glucuronidation, and the modulation of this major metabolic pathway was associated with an apparent decrease in levels of 8-iso-prostaglandin $F_{2\alpha}$. (Supported by CIHR).

**BasicRes No. 3: Postnatal maturation of cytochrome P450 2E1 and glutathione-S-transferases, pharmacokinetic model validation**

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Maturation of systemic clearance mechanisms during postnatal development produces dramatic and rapid improvements in a neonate's capacity to eliminate drugs. Our study's objective was to evaluate underlying assumptions of a pharmacokinetic model that describes hepatic Cytochrome P450 (CYP) enzyme activity ontogenesis and to extend the model to Phase II enzymes. We tested the hypothesis that age-dependent changes in intrinsic clearance are attributed only to changes in $V_{max}$. CYP2E1 and GST ontogenesis were determined in male Sprague-Dawley rat (n=4) hepatic microsomes and cytosols at day 20 of gestation and at postnatal ages 1, 3, 5, 7, 10, and 14 days, and 3, 4, 6, 9, 12, and 16 weeks. Body and liver weights, hepatic microsomal and cytosol protein content, and total CYP protein content were measured to calculate age-dependent hepatic scaling factors. CYP2E1 activity ontogenesis was monitored with Chlorzoxazone (CZX) and *p*-nitrophenol (PNP) using HPLC analysis. Spectrophotometric analysis of glutathione conjugation of 2, 4- dinitro-1-chlorobenzene was used to monitor general GST enzyme activity ontogenesis. Metabolite formation velocities were measured at concentrations of 0 to 1000 μM to

determine age-dependent $V_{max}$ and $K_m$ values. The results showed a similar pattern of postnatal increase in CYP2E1 and GST enzyme activity up to 4 weeks of age. Age-dependent changes in $V_{max}$ with CZX were significantly different (*P<0.05*) between the different age groups and covaried with PNP. $K_m$ values were similar with adult values at all stages of postnatal maturation except in fetal, and 1 and 3 day old livers. Microsomal protein (MP) contents increased with postnatal age with dramatic increase after day 14 of age. Although the data are not totally consistent with the model assumptions and hypothesis, further work is needed to determine whether the model may allow predictions of *in vivo* hepatic metabolic clearance.

**BasicRes No. 4: Heat treated fungizone® (HFZ) maintains amphotericin B's (AmB) antifungal activity while decreasing its renal cytotoxicity: role of fungal phospholipases**

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**Purpose:** The purpose of this investigation was to determine if the addition of fungal phospholipases to pig kidney cells would restore HFZ's cytotoxicity to those observed when these cells were treated with fungizone® (FZ).
**Methods:** LLC-$PK_1$ cells, a pig kidney cell line, were grown in T75 flasks and seeded in 96 well plates at a density of 40,000 cells/$cm^2$. FZ and HFZ treatment solutions containing a concentration of 10, 20, and 50 µg AmB/ml were prepared. HFZ was prepared by heating the drug in a 70°C water bath for 20 minutes. A concentration of 0.43 units/ml of Fungal Phospholipases $A_2$ was added to all treatment groups and incubated for 1 h at 37°C before the cells were further incubated for an additional 18 h with different concentrations of FZ and/or HFZ. Following this incubation, an MTS assay was performed to determine the mitochondrial respiration as a function of cell proliferation, thereby indicating the viability of cells post treatment.
**Results:** HFZ was significantly less toxic than FZ to renal cells. However, the addition of fungal phospholipases to the cell culture increased HFZ cytotoxicity to the levels seen for FZ. FZ treatment resulted in 80% toxicity in LLC-$PK_1$ cells versus control whereas HFZ showed a dose-dependent increase in cytotoxicity from 20% to 50% over AmB concentrations from 10µg/ml to 50µg/ml versus control. In the presence of fungal phospholipases, HFZ renal cytotoxicity was similar to FZ renal cytotoxicity.
**Conclusions:** The addition of fungal phospholipases to pig kidney cells restores HFZ cytotoxicity to those observed when these cells were treated with FZ.
**Acknowledgements:** Funding provided with a grant from the Canadian Institutes of Health Research.

**BasicRes No. 5: Changes in gene expression of natriuretic peptides and myosin heavy chain isoforms in cardiomyopathic hamsters after treatment with growth hormone.**

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Idiopathic dilated cardiomyopathy (IDC) is a cardiac disease known to correlate with changes in hypertrophic biomarkers gene expression including natriuretic peptides (NPs) and myosin heavy chain isoforms ($\alpha$- and $\beta$-MHC), for which a switch from $\alpha$ to $\beta$ isoform is associated with a reduced energy spent. The cardiomyopathic hamster (CMH) is a suitable model of the human IDC showing multifocal necrosis, dilatation and severe HF. Clinical observations have shown that the administration of growth hormone (GH) may improve cardiac function in patients with IDC. The aim of the present study is to examine the gene expression of NPs and MHC isoforms by RT-PCR in the left ventricle following GH administration at a daily dose of 1 mg/kg s.c. to female CMH, starting at either 30 days (early phase of the disease) or 200 days old (late phase), until they reach 240 days old. Vehicle-treated CMH show elevated ventricular ANP (3- to 4-fold) and BNP (1.3-fold) mRNA levels compared to controls (Golden Syrian hamsters). Following GH treatment, BNP gene expression is further increased by 2.6- and 3.4-fold versus controls when treated from the early or late phase of the disease, respectively. In contrast, ventricular ANP gene expression is reduced to control levels in the late phase treatment. As expected, $\beta$-MHC expression is increased in vehicle-treated CMH compared to controls (~1.6 fold), and GH administration further increased $\beta$-MHC expression (~2.2 fold versus controls) in the late phase of the disease. We conclude that GH therapy is associated with changes in cardiac hypertrophic biomarkers expression and with an increase in the low ATPase myosin isoform.

**BasicRes No. 6: Mechanisms involved in the modulation of aryl hydrocarbon receptor-regulated genes by tumor necrosis factor-$\alpha$ and lipopolysaccharide**

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Little is known about the mechanisms involved in the modulation of aryl hydrocarbon receptor (AHR)-regulated genes during pathophysiological conditions such as inflammation. In the present study the effect of tumor necrosis factor (TNF)-α and lipopolysaccharides (LPS) on the constitutive and inducible expression of the AHR-regulated genes: cytochrome P450 1a1 (cyp1a1), glutathione S-transferase Ya (GST Ya), and NAD(P)H:quinone oxidoreductase (QOR) were determined. Murine hepatoma Hepa 1c1c7 (WT), AHR-deficient (C12) and AHR nuclear translocator protein (ARNT)-deficient (C4) cells were incubated with recombinant murine TNF-α (1-10 ng/ml) or LPS (1-5µg/ml) with or without the AHR ligand, β-naphthoflavone (βNF, 10 µM). We found that TNF-$\alpha$ and LPS strongly repress the constitutive expression and the βNF-mediated induction of cyp1a1, cyp1a2, GST Ya and QOR in WT but not in C12 and C4 cells dose-dependently. TNF-$\alpha$ and LPS did not significantly alter the mRNA expression of the stress protein, heme oxygenase (HO-1) in WT cells, suggesting that HO-1 is not involved in the modulation of AHR-regulated genes by TNF-$\alpha$ and LPS. In addition, significant increase in reactive oxygen species (ROS) was observed in WT, C12 and C4

cells treated with TNF-$\alpha$ or LPS. The production of ROS was higher in WT cells than in C12 and C4 cells, suggesting the involvement of AHR in the ROS production. In conclusion, the downregulation of AHR-regulated genes by inflammation is dependent on the presence of both heterodimeric transcription factors, AHR and ARNT. Furthermore, ROS may directly or indirectly be involved in the downregulation of AHR-regulated genes.
**Acknowledgement,** Negar Gharavi is nominated for Canadian Foundation for Pharmacy National Student Research Poster Award.

**BasicRes No. 7: Cytokine-mediated regulation of the rat mdr1b promoter in Huh7 hepatoma cells**

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**Background.** Decreased efficacy of chemotherapy often occurs due to a mechanism known as multidrug resistance (MDR). Acute inflammation induced by cytokines or lipopolysaccharide (LPS) has been shown to decrease basal expression of the multidrug resistance gene *mdr1b* as well as suppress its induction in rodents. We hypothesize that binding of negative regulatory transcription factors (NF-IL6 or STAT3) may be involved in the cytokine-mediated down regulation of *mdr1b* transcription.
**Methods.** Sprague-Dawley rats were administered 5mg/kg LPS i.p. or saline, livers removed at various times and nuclear proteins isolated. Electrophoretic mobility shift assays (EMSA) were performed with $^{32}$P-radiolabelled *mdr1b* promoter fragments (nt –291 to –278). Influence of cytokines on transcriptional activity was examined in chloramphenicol acetyltransferase (CAT)-promoter construct fragments (wildtype or deletion construct- Del nt $^{-291\rightarrow-278}$).
**Results.** EMSA revealed an increased binding of nuclear fractions with the nt $^{-291\rightarrow-278}$ promoter region in LPS-treated rats. Competition and supershift experiments indicated that neither NF-IL6, STAT3 nor NF-κB interacted at this region, suggesting binding of a novel transcription factor. CAT assays detected a dramatic decrease in basal *mdr1b* transcriptional activity ($P<0.005$) in deletion constructs. Reporter assays also revealed dose-dependent induction of transcription in both wild type and deletion constructs in cytokine-treated cells. This site appeared to be involved, in part, in LPS and IL-1$\beta$ mediated induction of transcription.
**Conclusions.** A novel transcription factor appears to interact at the promoter region nt $^{-291\rightarrow-278}$. Reporter assays also reveal that this region is required for basal transcriptional activity of the rat *mdr1b* and that cytokines may modulate *mdr1b* transcription through interaction at this region. These studies significantly increase our basic understanding of cytokine-mediated regulation of the MDR genes in malignant hepatocytes.

**BasicRes No. 8: Effect of warfarin on haloperidol lipoprotein and protein association within normolipidemic and hyperlipidemic human plasma**

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**Purpose:** The objective of this study was to determine the protein and lipoprotein association of Haloperidol in the presence of different concentrations of warfarin in normolipidemic and hyperlipidemic human plasma.
**Methods:** Warfarin sodium was pre-incubated in normolipidemic and hyperlipidemic human plasma at different concentrations (1, 5, 10 µg/mL) for 24 hours at 37˚C (n=6). Following the pre-incubation with warfarin, [$^3$H]Haloperidol mixed with unlabeled Haloperidol (total concentration = 18 ng/mL) was incubated in this plasma for 1 hour at 37˚C. Treated plasma samples were separated into four fractions: triglyceride-rich lipoproteins (TRL), low-density lipoproteins (LDL), high-density lipoproteins (HDL), and lipoprotein-deficient plasma (LPDP) by density gradient ultracentrifugation. Each lipoprotein and lipoprotein-deficient fraction was assayed for [$^3$H]Haloperidol by radioactivity. In addition, 100µL of the LPDP fraction from each treated plasma samples were pipetted into an ultrafiltration column to distinguish free Haloperidol from protein-bound Haloperidol. The filtrate and filter from the devices as well as 100µL of each LPDP sample were assayed for [$^3$H]Haloperidol by radioactivity to determine the amount of free compared to protein-bound Haloperidol.
**Results:** In normolipidemic plasma, increasing concentrations of warfarin did not significantly alter the lipoprotein distribution of haloperidol. In the presence of warfarin, the percentage of protein- bound Haloperidol increased from 25.5% ± 1.0% (0µg/mL) to 52.2% ± 2.8% (10µg/mL). In hyperlipidemic plasma, increasing concentrations of warfarin correlated with an 11.5% decrease in the amount of haloperidol recovered in the LPDP fraction and a concurrent 4.8% and 5.2% increase in the amount of haloperidol recovered in TRL and LDL fractions, respectively. As warfarin concentration increased, the percentage of protein-bound Haloperidol decreased from 65.8% ± 2.2% (0µg/mL) to 57.0% ± 3.2% (10µg/mL).
**Conclusion:** In hyperlipidemic plasma, increasing concentrations of warfarin correlated with a significant decrease in amount of haloperidol recovered in the LPDP fraction and concurrent increases in the amount of Haloperidol recovered in the TRL and LDL fractions.
**Acknowledgements:** Funding for this project was provided by CIHR and Riverview Hospital

**BasicRes No. 9: Electrophysiological characterization of mutations found in the gene *Kv1.5* in patients with different forms of atrial fibrillation**

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Atrial fibrillation (AF) is the most prevalent form of cardiac arrythmias. Shortening of the atrial effective refractory period is an important factor contributing to AF, involving functional changes in ion channels. AF could be familial, idiopathic (without identified cause) or consecutive to a cardiac surgery. The gene *Kv1.5* encodes an atrial potassium channel. Considering the important role of Kv1.5 in atrial repolarization, we hypothesized that mutations in *Kv1.5* are implicated in AF. We searched for the presence of mutations in the gene *Kv1.5* of patients with idiopathic (6), familial (10), and post-surgery (26) AF. Healthy patients (20) and others (10) having undergone a coronary artery bypass surgery without developing post-surgery AF were used as controls. Total DNA of patients was extracted from blood. The gene *Kv1.5* (promoter and coding region) was amplified using PCR, and sequenced. Three mutations were identified: R87Q (1 patient with post-surgery AF), A251T (1 patient with familial AF, 1 with post-surgery AF and 1 having undergone the surgery without developing AF) and P307S (2 patients with post-surgery AF). These mutations were reproduced by directed mutagenesis and their effects on channel functions were evaluated using the whole-cell patch-clamp technique on transfected CHO cells. The mutations R87Q and P307S accelerate the channel opening and A251T shifts the I-V curve towards more negative voltages compared to the wild type. The effects of these mutations will tend to enhance the Kv1.5 current and could thus be involved in the pathogenicity of AF.

**BasicRes No. 10: Study on the correlation of drug dissolution and polymer swelling from a matrix tablet using texture analyzer**

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**Purpose:** To study the relationship between drug dissolution and polymer swelling from a controlled release matrix tablet of pseudoephedrine using texture analyzer.
**Methods:** A series of controlled release matrix tablets of pseudoephedrine were prepared by direct compression method using identical compression force. Controlled release of pseudoephedrine was achieved by combined use of matrix excipients Comprital® 888 ATO (C) and Polyox® WSR 301 (P). Dissolution profiles of the tablets were evaluated using USP Method II. Thickness of gel formation and area under the curve (AUC, product of the force of the probe sensed and the distance the probe traveled) during drug dissolution were also recorded using a Texture Analyzer. The relationship between drug dissolution and polymer swelling was correlated and interpreted.
**Results:** Drug dissolution within the first 90 minutes reduced with the increased proportion of C and P in tablet formulation. However, drug dissolution was complete in 6 hours due to the aqueous solubility of pseudoephedrine. Thickness of gel formation as well as the AUC increased linearly with the dissolution time, indicating first-order kinetics of water penetration into the tablet matrix. Linear correlation was also observed between thickness of gel formation and square of drug release percentage. Various dissolution parameters are tabulated.

| Formulation | C/P Content (w/w %) | Diffusional Exponent (n) | Release Rate Constant (k) | Correlation Coefficient ($r^2$) | Dissolution Time (50%) |
|---|---|---|---|---|---|
| F1 | 3/10 | 0.439 | 0.084 | 0.995 | 0.92 hr |
| F2 | 3/15 | 0.470 | 0.073 | 0.996 | 1.00 hr |
| F3 | 3/20 | 0.504 | 0.061 | 0.996 | 1.14 hr |
| F4 | 3/25 | 0.500 | 0.057 | 0.995 | 1.27 hr |
| F5 | 3/30 | 0.526 | 0.049 | 0.996 | 1.38 hr |
| F6 | 3/50 | 0.498 | 0.052 | 0.998 | 1.65 hr |

**Conclusions:** There was a linear relationship between drug dissolution and polymer swelling of a controlled release matrix tablet of pseudoephedrine. The study demonstrated a unique application of Texture Analyzer in characterization of tablet quality control and drug dissolution.

**BasicRes No. 11: Pharmacokinetic study of methotrexate loaded poly(L-lactic acid) microspheres following intra-articular injection in rabbits**

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**Purpose:** The plasma concentrations and tissue distribution of methotrexate (MTX) were investigated following intra-articular injection of either free MTX or controlled release MTX loaded microspheres in healthy rabbit joints.
**Methods:** MTX loaded poly(L-lactic acid) (2000g/mole) microspheres (30-90μm) were manufactured using the solvent evaporation method. Free MTX or MTX loaded microspheres (10mg MTX) was injected into the right knee joint cavity of rabbits. Blood samples were taken at predetermined times from the jugular vein. Urine samples were also collected over time periods up to 24 hours. The rabbits were sacrificed and the major organs and synovial tissues were removed 6 hours and 24 hours post injection (n=4). MTX concentrations in the plasma and major organs were determined by HPLC.
**Results:** For rabbits injected with free MTX, the plasma MTX concentration reached a maximum at 15 minutes (Cmax 2.5μg/mL) and declined to undetectable levels 8 hours following the injection. The plasma MTX

concentrations of rabbits injected with MTX microspheres peaked at 15 minutes (Cmax 0.5μg/mL) and declined to undetectable levels 4 hours following the injection. Analysis of urine collected showed that 19 times more MTX was excreted in the urine from rabbits injected with free MTX compared to those injected with MTX loaded microspheres in the period of 0 to 3 hours. The concentration of MTX in the synovial fluid 6 hours following intra-articular injection was 10 times higher in the rabbits injected with microspheres than in the rabbits injected with free MTX.
**Conclusion:** Free MTX was rapidly cleared from the joint cavity while MTX encapsulated microspheres decreased the clearance and retained MTX in the joint cavity.

**BasicRes No. 12: In vitro and in vivo percutaneous permeation of insect repellent N, N-Diethyl-m-toluamide (DEET) and sunscreen oxybenzone**

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**Purpose:** The objective of this study was to investigate concurrent skin absorption of DEET and oxybenzone in vitro and in vivo.
**Methods:** In vitro diffusion studies were conducted at 45°C, using Franz-style cells with piglet epidermis (300-500μm) as membrane model. DEET and oxybenzone at 5 mg/mL in 50% ethanol (E), polyethylene glycol 400 (PEG-400) and propylene glycol (PG) were used either separately or in combination. Three commercially available repellent and sunscreen products (Coppertone® Sunblock Lotion, OFF!® Repellent Lotion and OFF!® Repellent Lotion with Sunscreen) were applied to the back of 6 piglets. Tape strippings were collected at 2, 12 and 48 hours after the application. Concentrations of DEET and oxybenzone were analyzed using a validated HPLC assay.
**Results:** Overall in vitro permeation ranged 0.6-18% for DEET and 0.4-20% for oxybenzone respectively. Enhanced permeation across piglet skin was found for both DEET and oxybenzone when the two compounds present concurrently (DEET: 289% in PG, 243% in E and 112% in PEG-400; oxybenzone: 139% in PEG-400, 120% in PG and 112% in E). E and PG significantly increased the permeation of DEET across the membrane. Recovery of DEET and oxybenzone from in vivo tape stripping varied dependent upon sampling time and formulation applied. Overall recovery amounts at 48 hours were 5.3% for DEET and 22.4% for oxybenzone respectively. Combined formulation showed higher recovery of 81.8% for DEET and 135.0% for oxybenzone respectively compared to single-component counterpart.
**Conclusions:** Permeation of DEET and oxybenzone was synergistically enhanced when they were applied simultaneously. Mechanisms of such absorption synergy as well as approaches to reduce permeation of DEET and oxybenzone need to be systematically identified.

**BasicRes No. 13: 3-Hydroxy-4,9-dihydro-isothiazolo[5,4-*b*]quinoline-4-ones as topo-II inhibitors with antitumor activity**

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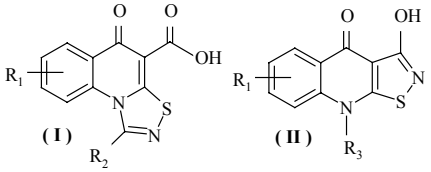
**Study Objectives:** Based on the previously reported topo-II inhibitory and anticancer activity of 8-oxo-1,2,4-thiadiazolo[4,5-*a*]quinoline-9-carboxylic acids (**I**) and application of structure-based molecular modeling approach, we designed and synthesized novel 3-hydroxy-4,9-dihydro-isothiazolo[5,4-*b*]quinoline-4-one derivatives (**II**) in order to investigate the potential of these molecules as selective inhibitors of topoisomerase-II and potential antitumors.
**Methods:** Using Hyperchem program, the optimum geometry of I ($R_1$, 5-F; $R_2$, Ph) was determined through molecular mechanic optimization. Based on the above data, the linear analogue II ($R_1$, 7-F; $R_3$, $CH_2Ph$) was designed, which was perfectly overlapping with the optimized geometry of compound I. Compound II was then synthesized through different synthetic approaches.
**Results:** Preparation of compound II was achieved by either conventional synthesis of the relevant 2-mercaptoquinolone carboxylic acid followed by N-alkylation and cyclization, or through convergent synthesis starting with appropriate benzoylacetoacetate intermediate and further cyclization. The synthesized compounds were




evaluated for their topo-II inhibitory and cytotoxic activity. Based on the successful synthesis of parent $N_9$-benzyl analogue, and in order to study the effect of different substituted alkyl, cycolalkyl, aryl, and heteroaryl moieties on the overall Topo-II inhibitory and cytotoxic activities of this class of compounds, several new $N_9$-substituted analogues of structure **II** were synthesized and evaluated for the targeted activities.
**Conclusions:** Through this study, we were able to introduce novel synthetic methodologies for the preparation of linear isothiazolo-quinolone derivatives with potential topo-II inhibitory and cytotoxic activities.

# CLINICAL RESEARCH

**ClinRes No. 1: Optimizing care of diabetes patients with Ischemic heart disease at Burnaby Hospital**

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**OBJECTIVES:** Ischemic heart disease (IHD) is the #1 cause of death in diabetes (DM) patients. The study objectives were: (i) to establish patterns of practice; (ii) to identify key problems; and (iii) to improve care of DM-IHD patients at our busy, 515-bed, university-affiliated, primary and secondary care centre (i.e. 60,000 emergency visits per year).
**METHODS:** This retrospective, open evaluation included all Type 2 DM patients admitted with a primary or secondary diagnosis of IHD, from April 1998 to March 1999.
**RESULTS:** Results for the 130 study patients included: average (avg.) age of 71 years (yrs); avg. age at DM diagnosis 59 years; 45% female; 22% ethnic; 74% overweight; 75% hyperlipidemia; 78% HT; 63% smokers; 54% family history of IHD; and an avg. of 5 cardiovascular risk factors. DM complications included: 18% eye surgery; 2% limb amputation; 36% coronary angiography; 15% PTCA; and 14% CABG.
The most common reasons for admission were: IHD, CHF and AMI. During hospitalization, there was also: (a) more ASA, diuretics, beta-blockers, digoxin, and ACE inhibitors were prescribed compared to medications used prior to admission; (b) hyperglycemia and hypoglycemia in 43% and 36%, respectively; (c) HT in 70% and (d) thrombolysis in 17%. Routine lab monitoring did not include $HbA_{1C}$, lipids or microalbuminuria.
Of the 130 study patients, 75% were discharged alive and 8% died. Referrals to our Diabetic Education Centre, and Healthy Heart Program were low (19%, 9%, respectively). Our recommendations included: (i) more intensive control of blood glucose, IHD, hypertension and diet; and (ii) more DM-IHD patient education and discharge follow-up.
**CONCLUSION:** IHD management in DM patients could be improved by referring more patients to a Diabetic Education Centre and a Healthy Heart (cardiac prevention) Program.

**ClinRes No. 2: Validation of logistic regression models for the development of thrombocytopenia in critical care patients.**

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**Objectives:** Thrombocytopenia is common and clinically relevant in critically ill patients. The objectives of this study were to identify explanatory variables for thrombocytopenia at and after admission, and to evaluate the generalizability of these statistical models by internal and external validation procedures.
**Methods:** Logistic regression was used to identify predictors for thrombocytopenia ($< 100 \times 10^9$/L) using data from 792 intensive and coronary care unit (ICU/CCU) patients at a community hospital. Admission and post-admission models were developed and validated internally using bootstrap re-sampling techniques. Subsequently, the admission model was validated externally using data from 572 patients admitted to a tertiary care ICU.
**Results:** Predictors were identified for the admission (admission diagnoses, APACHE II score, age, surgery within 24 hours of admission, and admission platelet count) and post-admission (admission diagnoses, APACHE II score, admission platelet count, fresh frozen plasma transfusion, packed red blood cell transfusion, Swan-Ganz catheters, imipenem, and heparin) models, respectively. The area under the receiver operating characteristic (ROC) curve (95% confidence interval) of the admission and post-admission models were 0.925 (0.897–0.957) and 0.942 (0.920–0.963), respectively. Based on the bootstrap method, the optimism in these estimates was shown to be 0.008 (0.006–0.010) and 0.021 (0.019–0.023), respectively. For the external validation set, the area under the ROC of the admission model was 0.808 (0.757-0.860).
**Conclusions:** Both models demonstrated excellent discriminating ability and low bias. The admission model demonstrated very good predictive performance in the external validation dataset. Clinicians should consider the identified predictors in diagnostic and treatment decisions involving critically ill patients who may be at risk of thrombocytopenia.

**ClinRes No. 3: Phenotypic strategies, a better approach for individualized warfarin therapy**

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CYP2C9 metabolizes drugs such as losartan and (S)-warfarin. CYP2C9 is polymorphic and correlation between warfarin clearance and CYP2C9 genotype had been demonstrated in healthy volunteers but not in patients undergoing treatment with various drugs under usual clinical conditions. The overall objective of our study was to determine, in patients with a multiple drug regimen, correlations between required doses of warfarin and 1) CYP2C9 genotypes, 2) CYP2C9 phenotypes losartan metabolic ratio or S- and R-warfarin ratio. Losartan and its main metabolite EXP 3174 were analysed by HPLC in 6-hour urine samples collected from 77 subjects after a single 12.5 mg oral dose of losartan before initiating warfarin therapy. S- and R-warfarin concentrations were analyzed by HPLC in blood samples collected from 96 subjects at 3, 14 and 24 hours following initiation of warfarin treatment. The three most common CYP2C9 allelic variants were analysed by PCR-RFLP using genomic DNA of 121 patients. Two multiple

linear regression analysis models were developed using phenotype, age, weight, gender, amiodarone treatment (only for phenotype based on losartan metabolic ratio) and genotype (only for phenotype using warfarin as probe drug) as cofactors. These models explain 40% of variability in warfarin dose. In contrast, a genotype analysis correlated with phenotype values only in patients carrying two copies of variant alleles. Our results indicate that in more than 90% of patients, a genotypic approach does not predict required doses of warfarin. CYP2C9 phenotype could represent a more favorable strategy to explain intersubject variability in warfarin disposition.

**ClinRes No. 4: Evaluation of mitoxantrone in secondary progressive multiple sclerosis (SPMS)**

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**Purpose:** To evaluate the efficacy and safety of Mitoxantrone (Novantrone) in patients diagnosed with SPMS.
**Methods:** An open-label study was conducted in 42 patients that were diagnosed with SPMS. Eligibility of all screened patients was determined in accordance with previously established criteria. All eligible patients were separated into treatment (n=31) or control groups (n=11) based on their informed decision to receive or not receive mitoxantrone treatment. Both treatment and control groups received baseline assessments that included: urinalysis, serum pregnancy test, blood work, cardiac monitoring (MUGA scans) and expanded disability status scale (EDSS) scoring. All treated patients were scheduled to receive an intravenous infusion of 12 mg/m$^2$ of mitoxantrone every 3 months up to a maximum of 10 treatments or a cumulative dose of 120 mg/m$^2$ over a 27-month period. Urinalysis, serum pregnancy test, blood work, drug related adverse effects (nausea, hair loss) and EDSS scoring were conducted prior to each successive treatment and 10 days post treatment. MUGA scans were scheduled every 6 months up to 8 treatments or 100mg/m$^2$ after which were conducted following each successive treatment until study completion. All control patients received standard blood work, urinalysis and EDSS scoring with each regularly scheduled clinic visit.
**Results:** Interim analysis revealed that 17 out of 31 patients (~55%) in the active treatment group had withdrawn from the study after receiving an average of approximately 3 treatments or 36 mg/m$^2$. Reasons for premature study termination included: cardiac complications (~47%), patient concerns (~29%), quality of life concerns (~29%), urinary tract complications (~6%) and other (~12%). In addition, patients receiving active treatment did not display a statistical significant improvement in the average EDSS scoring.
**Conclusions:** Preliminary results obtained from the interim analysis suggest insufficient evidence to validate the use of mitoxantrone in the treatment of SPMS. Although target recruitment numbers have been reached, final conclusions will be determined once all remaining participants in the active treatment group complete or withdraw from the study.

**ClinRes No. 5: A novel genotyping algorithm for the CYP2D6*10 allele in Asians using real-time rapid-cycle PCR and multiplex PCR**

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**Objectives:** The CYP2D6*10 allele is common among Asians and associated with decreased metabolism of some CYP2D6 substrates. To study the effect of this allele on drug metabolism, it is necessary to accurately genotype patients for CYP2D6*10 (C188T). Based on reported allele frequencies among Asians, it is necessary to rule out CYP2D6*4 (C188T, G1934A) and CYP2D6*5 (gene deletion) before inferring the presence of CYP2D6*1 or CYP2D6*2 (C188). The project objectives are to devise a genotyping algorithm and to develop and validate genotyping methods for detecting the C188T and G1934A single nucleotide polymorphisms (SNPs) and CYP2D6*5.
**Methods:** Long PCR was used to amplify the CYP2D6 gene. Nested real-time PCR methods to detect the C188T and G1934A SNPs were developed and validated by restriction fragment length polymorphism (RFLP) and sequencing analyses of previously genotyped reference samples (CYP2D6*1/*1, CYP2D6*1/*4, CYP2D6*4/*4). A multiplex PCR method to detect CYP2D6*5 using published primer sequences was developed and validated using reference samples (CYP2D6*1/*1, CYP2D6*1/*5, CYP2D6*5/*5).
**Results:** C188T and G1934A genotyping results using real-time PCR were consistent with RFLP analyses, sequencing analyses, and the genotypes of the reference samples. CYP2D6*5 genotyping results were also in agreement with the genotypes of the reference samples.
**Conclusions:** The combination of real-time PCR to detect the C188T and G1934A SNPs and multiplex PCR to detect CYP2D6*5 provides an efficient approach for CYP2D6 genotyping in Asian patients. These methods can be applied to a novel genotyping algorithm for future clinical trials studying the effect of CYP2D6*10 on drug metabolism in Asians.

# EDUCATIONAL & TEACHING RESEARCH

**Edu/Teach No. 1: Anticoagulation training and certification in Canada**

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**Background:** No standard warfarin certification exists in Canada. Specialized training and education are highly recommended in consensus guidelines and by expert groups such as the Anticoagulation Forum. In 2002, an intensive anticoagulation training program was created for clinical pharmacists who had a strong interest in teaching and supporting outpatient anticoagulation (warfarin) management. With the support of Roche Diagnostics Canada, a 3.5-day anticoagulation workshop was developed.
**Methods:** The format included didactic lectures, case studies, hands-on training and a written exam. The material was based on the U.S. Certified Anticoagulation Provider Program and other references. The 6 interactive modules included: pathophysiology of thromboembolic disease; pharmacology of antithrombotic drugs; warfarin pharmacology; point of care INR testing (POCT); patient assessment/monitoring; and patient education. Certification was granted upon successful completion.
**Results:** Two anticoagulation workshops in Montreal (July 2002) and Halifax (September 2002) have yielded 20 and 11 certified anticoagulation pharmacists, respectively. Twenty-four of the 31 certified anticoagulation pharmacists have joined the Anticoagulation Resource Team (ART). ART was a network of clinical pharmacists who promoted optimal oral anticoagulation management through education and knowledge-sharing in Canada. ART members would provide assistance and local support to patients and community pharmacists across Canada. Community pharmacists would be encouraged to develop their practice, from POCT INR training to full anticoagulation dosing and management.
**Conclusion:** The anticoagulation workshops and ART were successful in increasing the confidence and skills of clinical pharmacists in warfarin management and POCT. As of December 2003, there were over 60 certified anticoagulation pharmacists in Canada, in community & hospital practice.

**Edu/Teach No. 2: Self-care Curriculum Revitalized: The Experience Within University of Toronto's International Pharmacy Graduate Program**

*Janet Sio, Diem Cong* & Karen Elaine Edge

International Pharmacy Graduate Program, Faculty of Pharmacy, University of Toronto

**Purpose:** To redesign and implement a self-care course for the International Pharmacy Graduate (IPG) program, a bridge program for foreign-trained pharmacists housed within the Faculty of Pharmacy at the University of Toronto.
**Methods:** In 2003, interview and focus group feedback data about IPG student and faculty perceptions of IPG instruction and curriculum was collected. Based on this data and literature detailing adult education methods, the self-care course was revised, employing a triad of pedagogical strategies including: collaborative learning projects, facilitated case study seminars, and role-playing over a 7 week period covering 9 self-care topics. On completion of the course, self-care participants filled out a quantitative survey, gauging perceived impact of their participation on their content knowledge, communication skills and understanding of the therapeutic thought process. Participants were not required to self-identify on the questionnaire and the Statistical Package for the Social Sciences (SPSS) was used to analyze the surveys completed for this paper.
**Results:** Preliminary findings demonstrated significant learning via all methods employed within the course. Students also felt that the self-care course created significant links between other program curriculums and enriched their overall learning experience. Additional preliminary observations indicated high levels of satisfaction with interactive methods applied during the course; perceived improvement within peripheral skills such as research, computer, collaboration, and communication skills. Participants also noted significant challenges with the course including intense workload and challenges in keeping up with the quantity of assignments.
**Conclusions:** This paper suggests that a three dimensional approach to self-care instruction is the most effective means of information acquisition for adult learners. These findings have implications for undergraduate and bridge program instruction within Pharmacy and other professional adult training programs.

**Edu/Teach No. 3: Electronic portfolios: a novel approach for assessing learning outcomes.**

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Faculty of Pharmaceutical Sciences, University of British Columbia

**Background:** An electronic portfolio (e-portfolio) is an electronic repository of critical reflections and artifacts (documentation) that allows students to demonstrate evidence of learning and competency in a number of areas.
**Objective:** To pilot test the use of e-portfolios as a learning and assessment tool for first year Pharmacy students in the new outcomes-based curriculum.
**Methods:** From the Faculty's list of ability based outcomes, four general ability outcomes were selected as the focus for the first year. Students were introduced to e-portfolios during orientation week and developed their collection of artifacts over the year. A multi-course, year-end assignment will require students to submit a reflective statement and supporting artifacts to demonstrate their achievement of the selected outcomes. A grading rubric was developed for use by e-portfolio evaluators. A year-end survey will be used to gather information from students and assessors related to aspects such as ease of use of marking rubric and software, technical difficulties, and the perceived value of the e-portfolio for individual learning and skill development.

**Results:** The project has been implemented in four of the five required first year courses and is currently ongoing. Results of the year-end survey will be available in May 2004.
**Conclusions:** Results of the survey will be used to inform future use of e-portfolios by Pharmacy students.

**Edu/Teach No. 4: Investigating the 'Future' of Pharmacy: the professional maturation and training of nascent pharmacists at one Canadian faculty of pharmacy**

*Jennifer D. Beales* and Zubin Austin

Leslie Dan Faculty of Pharmacy, University of Toronto

To investigate how 4th year pharmacy students understand their professional training, future practice, and the profession, a survey and follow-up group interviews were conducted with a small sample of students (n=82) attending a prominent Canadian university. Students reflect on four years of schooling and data illustrate their perceptions of how they *see* their professional education and socialization. Findings suggest that there are significant gender and cultural differences among pharmacy students that influence interpretations of their professional training and future career aspirations. Gender is an important social variable that influences why students choose pharmacy and what they seek from the profession. Students' perceptions of their professional training suggest that they are satisfied that they have acquired the necessary skills to practice pharmacy, yet doubt their competence within a practice setting. Moreover, students question their professional training, as their program emphasizes theoretical over practical courses. Thus, professional education instills competence yet may not adequately prepare students for the working world. Implications of the research are discussed in relation to the graduating students, pharmacy practice and other professions.

**Edu/Teach No. 5: Investigating socio-cultural awareness in pharmacy curricula: The role of case examples**

*Jennifer D. Beales*

Leslie Dan Faculty of Pharmacy, University of Toronto

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**Edu/Teach No. 6: Evaluating First Year CAPS-I – Cases in Pharmaceutical Sciences: Educational successes and challenges**

*Ingrid Price*

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In 2003/04, UBC implemented a new outcomes-based curriculum. One of the cornerstones of this curriculum is the four-year Cases in Pharmaceutical Sciences (CAPS) course stream. The goal of CAPS is to support students towards achieving the curriculum outcomes through the use of real-life cases. While CAPS promises the opportunity for rich and experiential learning, it remains an untested approach that warrants evaluation to corroborate its effectiveness in meeting its curriculum goals.
**Objectives:** 1) To evaluate the initial offering of CAPS-I to determine its success in achieving set objectives; 2) To gain both formative and summative insights into course improvements.
**Method:** Ongoing narrative evaluations were collecting from students throughout the year. Detailed November mid-term and April year-end evaluations assembled student self-reports on two views of 30 specific objectives; *progress already achieved*, and *skills yet-to-be-acquired*. Data were analyzed for both formative and summative course improvements.
**Results**: Student self-reports showed improvements in all 30 objectives; 20 of the 'progress already achieved' improvements were statistically significant ($p<.05$), as were eight of the 'skills-yet-to-be-acquired' objectives. Summed over all objectives, these pre-to-post changes represent a better than one-half sigma improvement ($\eta = .567$) for the 'already achieved' objectives ($\alpha = .93$) and a quarter sigma improvement ($\eta = .262$) for the 'yet-to-be-acquired' skills ($\alpha = .95$).
**Conclusion:** Evaluation of this first round of CAPS-I has achieved multiple goals for both student outcomes and course delivery strategies. Selected improvements were implemented into the routine course delivery methods as quickly as they were recognized, others will await integration over the summer by the CAPS-II course design team and in time for the second iteration of CAPS-I. Meanwhile, students report significant progress toward curriculum outcomes.

**Edu/Teach No. 7: Characterization and analysis of direct observation forms completed by preceptors during final year experiential rotations**

*Andrea J. Cameron,* Lesley A. Lavack

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**Objectives**: To characterize types and relative frequency of comments and summarize average ratings.
**Methods**: Using mid rotation (week 4) evaluations from the first rotation of 2003 (January-February), a random sample of 24 evaluation sets was selected: 12 community (C) and 12 institutional (I). OBS forms (10 per set) were analyzed to characterize the type of comments written by preceptors, and relative frequency, using a coding system adapted from Salerno et al in J Gen Intern Med 2003. The types of feedback in the C and I settings were compared, as was the number of feedback phrases written on each OBS. Other data included the overall rating (1 to 7) and correlation with the biweekly pharmaceutical care evaluation.

**Results**: Most of the 742 phrases were specific (84% in C, and 86% in I) versus (vs) general, and positive (64% in both C and I) vs corrective. Formative feedback related to skills (67% C, 60% I), knowledge (25% C, 30% I), and attitudes (6% C, 10% I). Summative phrases occurred only in 2% of C. The average OBS rating was 5.1 ± 0.5 for C and 5.3 ± 0.4 for I rotations. An average of 10.5 ± 1.1 forms were completed for C and 9.8 ± 1.3 for I rotations. Each form had an average of 3.0 ± 1.2 phrases (C), and 3.1 ± 1.4 (I). Correlation coefficient of OBS with biweekly ratings was 0.60.
**Conclusions**: The types and frequency of feedback inform and guide development of specific educational interventions for students and preceptors. The data also provide a baseline for further analysis, including comparison to other rotations or final week-8 feedback.

**Edu/Teach No. 8: Experiences with collaborative practice among pharmacy and nutrition students assessing a standardized patient**

*Roy Dobson*, Jeff Taylor, Jane Cassidy, Doreen Walker

College of Pharmacy and Nutrition, University of Saskatchewan

**Study Objective:** To determine student perceptions of participating in an interdisciplinary team-based patient assessment lab.
**Methods:** Participants consisted of 21 third year Nutrition students (100%) and 54 fourth year pharmacy students (73%). Groups consisted primarily of pharmacy-nutrition (PN) or pharmacy-pharmacy pairings (PP). Due to scheduling constraints, there were also two groups of three pharmacy students (PPP). Students completed a questionnaire relating to their experience at the end of the assessment lab. Analysis included frequency and comparative statistics. Comments arising from open-ended questions were collected into themes.
**Results:** Most students agreed or strongly agreed: the objectives of the lab were clear (74.3%); the lab objectives had been met (79.7%); they were able to obtain a sufficient range of information from the patient (75.7%); their partner's knowledge and skills increased their ability to gather information (76.4%); it was easy to work together (90.5%); and working together was beneficial (89.2%). No significant differences were seen between PN and PP groups. Themes emerging from written comments included: the quality of the simulated practice setting; the scope of the patient interview; awareness of the role of another health professional; enhanced clinical knowledge; and interdisciplinary teamwork.
**Discussion:** The assessment lab's collaborative approach was well received by the students, with most reporting a real benefit from working with another person. Comments indicated enthusiasm for the scenario and the opportunity to work with "real" patients, and a greater awareness of the benefits of working together. Conclusions: Working with another health discipline did not appear to affect the assessment lab experience. However, comments suggest students working with another discipline may gain in their appreciation for the contributions made by another health profession.

**Edu/Teach No. 9: Feasibility of a web-based therapeutics course – a pilot evaluation**

*Heather R Kertland*,[1,2] Natalie R Kennie,[1,2] Lori A May,[1] Thomas ER Brown [1,3]

Leslie Dan Faculty of Pharmacy, University of Toronto[1], St Michael's Hospital[2], Sunnybrook and Women's College Health Science Centre[3]

**Introduction:** The strategic plan for the Doctor of Pharmacy program included the development of a part-time distance program. This program is intended to have the same academic rigor as the current full-time program. Currently small group tutorials are used to teach therapeutics. A pilot tutorial was developed and delivered using WebCT as the course management software.
**Objectives:** To evaluate the feasibility of conducting small group tutorials via WebCT. To determine the limitations and benefits of providing tutorials on-line
**Methods:** A tutorial from the full-time program was selected. Educational materials were developed using WebCT. The on-line tutorial was designed to mimic a current tutorial. Two groups participated in the pilot. Group 1 consisted of current full-time students. This group would be able to give feedback on how web-based learning compared to face-to-face. Group 2 consisted of graduates of the program. These individuals would comment on the feasibility of completing a tutorial on a part-time basis.
**Results:** Group 1 adapted well to the new format. Student's learning was assessed via written assignment, documented comprehension and application of materials. Group 1 had minimal difficulties with WebCT. Group 2 encountered greater difficulties, mainly due to older computers and lack of orientation to WebCT. Group 2 also identified the need to have specific times set aside for coursework.
**Conclusions:** WebCT is suitable for delivering small group tutorials on-line. However, students of the distance part-time program will have to have reasonable expectations of time requirements. It will also be necessary to orient students to the use of course management software and to provide support to address technology problems.

**Edu/Teach No. 10: Pilot trial of online training of evidence-based practice within the pharmacy curriculum at the Université de Montréal**

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**Background and purpose:** Knowledge and thinking abilities as well as providing drug information and recommendations are among the education outcomes identified by the Canadian Council for Accreditation of Pharmacy Programs. A committee was formed in 1999 to identify methods on implementing teaching of evidence-based practice (EBP) within the bachelor of pharmacy program. According to committee recommendations an online complementary training on EBP was to be developed and integrated longitudinally.
**Methods:** Eleven faculty members collaborated in developing content for self-learning of EBP on a WebCT platform. Corroboration of content in lectures and cases during classroom time was also included. Five modules were revised by a panel of students and pharmacists and implemented within the 1st and 2nd years of the curriculum. Baseline knowledge on EBP was assessed prior to accessing the content by an online anonymous survey. After completing the survey, students had a sequential access to the different modules and interactive activities. Knowledge and competency performance following completion of modules was evaluated through traditional examination.
**Results:** From the 340 students having access to the course, ninety percent of them (305/340) accessed the online content. Eighty-five percent of students (228/268) who completed the survey mention having heard of EBP, and believe it is important for their practice. However, only 8% (21/268) mention being at ease to retrieve clinical information on the web.
**Conclusion:** Several methods are currently used to implement EBP teaching within pharmacy curriculum. A longitudinal implementation of a web-based approach can be used to facilitate learning of EBP.

**Edu/Teach No. 11: Re-structuring of pathophysiology and therapeutics in the Doctor of Pharmacy program**

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Leslie Dan Faculty of Pharmacy University of Toronto, Sunnybrook and Women's College Health Science Centre[1], St Michael's Hospital[2], Mount Sinai Hospital[3], University Health Network[4]

**Introduction:** The two largest courses in the first year of the PharmD program were Pathophysiology and Therapeutics. These courses were coordinated and delivered separately. However the courses were fundamentally interrelated. Lectures from the pathophysiology course were used to provide a knowledge basis for the case-based tutorial sessions in therapeutics.
**Objective:** To integrate the pathophysiology and therapeutics courses to provide a coordinated approach for the problem-based learning process. To address workload issues in providing 432 hours of educational instruction.
**Methods:** Faculty met to determine how to integrate the courses. Content was reviewed for each course. Subject matter was clustered into disease-state themes. These themes were used as the basis to create Advanced Pharmacotherapy courses. Workload issues were evaluated.
**Results:** There were 36 pathophysiology lectures (108 hours) and 36 therapeutic tutorial cases (324 hours). The pathophysiology lectures were matched to each therapeutic case and grouped into the following themes; cardiology, infectious diseases (ID), neurology/psychiatry and general medicine. Each became a new course. Cardiology, ID and neurology/psychiatry each had 7 pathophysiology lectures and 7 corresponding therapeutic cases. General medicine had 15 different subjects; therefore it was divided into General Medicine I (8 lectures and cases) and General Medicine 2 (7 lectures and cases). A clinical faculty member with a specialty practice in the content area coordinated each course, which allowed for a better focus on course content.
**Conclusion:** Combining Pathophysiology and Therapeutics established integration of course content. The courses are now coordinated by 5 faculty members rather than two, therefore, redistributing workload.

**Edu/Teach No. 12: Development of a first year community practice experiential program.**

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In 2001, the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) recommended that the Faculty implement an "early exposure to practice" program. At the time of accreditation, the curriculum provided students with exposure to community and hospital practice during fourth year.
In response to the CCAP recommendation, the first year professional practice laboratory course was restructured from five practice laboratories to an integrated course involving six seminars, four practice labs and four site visits to community pharmacies. The course was designed to facilitate the transition of didactic student learning to the application of knowledge and learned skills in a community practice experience.
The site visits occurred on alternate weeks to the practice labs and seminars. The practice labs focused on developing the technical dispensing skills required in a community pharmacy. The seminars were designed to integrate the knowledge acquired by students in several first year courses with the skills practiced in the lab in preparation for their application during the experiential site visits. The seminars also functioned as debriefing sessions to review students' experiences and to challenge students to reconcile their course learning with what was observed in practice. Students were matched with a community pharmacist mentor on a 1:1 ratio. The site visit objectives were developed to allow application of learned skills and to gradually introduce the student to direct patient care activities. Students began with observation during patient interactions and progressed to conducting patient interactions under the mentor's supervision. Mentors were surveyed to solicit feedback on this initiative. Overall mentors strongly supported the program and indicated that they enjoyed working with students. Recommendations were made on ways to improve for subsequent years.

**Edu/Teach No. 13: An objective competency level-based method to assess student performance in experiential training.**

*Christopher J. Turner*, Ralph Altiere, Larry Clark, Carrie Maffeo and Connie Valdez

University of Colorado Health Sciences Center School of Pharmacy

**Objective**: To implement a competency-based assessment system in a sequence of three introductory pharmacy practice experience (IPPE) courses in a new entry-level Pharm.D. program.
**Method**: The University of Colorado Health Sciences Center School of Pharmacy implemented a sequence of three 2nd and 3rd year IPPE courses in its new entry-level Pharm.D. program. The primary component of each course is eight community pharmacy visits to conduct "OTC" counseling and health-promotion and disease prevention activities. Students are required to write statements that described their counseling activities, link each statement to an AACP Center for the Advancement of Pharmaceutical Education (CAPE) outcome-competency, and self-assess their level of competency. Each student, for selected CAPE competencies, must reach a pre-set number of competency statements graded as "exceeds" or "meets expectations" by the course directors to pass each course. Students with competency statements graded "below expectations" are asked to revise and re-submit their work or submit replacement statements. The work submitted by students in the first iterations of these courses was used by the course directors to establish required levels of performance for each competency in each course.
**Results**: For each course, multiple examples of competency statements graded "exceeds", "meets" and "below expectations" were selected by the course directors to create rubrics that define levels of performance for the CAPE competencies Thinking, Communication, Valuing and Ethical Decision Making, Social Interaction, and Provide Pharmaceutical Care.
**Conclusions**: a competency-based assessment system has been successfully introduced for a series of three IPPE courses in a new entry-level Pharm.D. program.

**Edu/Teach No. 14: The integrated laboratory network pilot project: a virtual approach to teaching pharmaceutical analysis**

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**Background:** The B.Sc.Pharm program at UBC includes a compulsory lecture-laboratory course in pharmaceutical analysis (enrollment: 137). One lecture topic, gas-liquid mass spectrometry (GCMS), has no corresponding laboratory as there is no GCMS instrument available for teaching purposes. Through a collaboration with WWU's Integrated Laboratory Network (ILN), which connects laboratory, computer and instructional technology (two-way audio and video) through high-speed networks, pharmacy students at UBC used a GCMS instrument at WWU to gather data to solve an in-class case-study.
**Objective:** To pilot test the WWU ILN as a teaching tool in the pharmaceutical analysis course at UBC.
**Methods:** The pilot project took place during the last two lecture-blocks of the term (four hours). A case-study, involving drug profiling of a neurosurgery team, was developed focusing on qualitative and quantitative GCMS analysis. The WWU ILN was demonstrated in-class to generate additional data to complement the chromatographic and mass spectral data provided to students along with the case. A survey was used to gather impact data on the activity.
**Results:** The ILN pilot project was successfully completed. While **s**tudents (response rate 85%) gave the activity an overall rating of "fair", 70% of students felt it helped their learning about chromatography and mass spectrometry. Students commented that the pilot project helped them to learn general concepts, to integrate and visualize theory and practical applications of GCMS, and provided a good review. Approximately 10-15% of students felt the pilot project was not helpful preferring "hands-on" access to instrumentation to virtual access through the ILN.
**Conclusions:** The WWU ILN was pilot tested in a compulsory pharmaceutical analysis course providing access to scientific instrumentation not available to students at UBC. Impact data suggest that the ILN has the potential to support student learning.

**Edu/Teach No. 15: An interfaculty pain curriculum for health professional students: an evaluation**

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[1]Leslie Dan Faculty of Pharmacy, [2]Department of Physical Therapy, [3]Faculty of Medicine, [4]Faculty of Nursing, University of Toronto

**Background:** Effective pain management requires health professionals to understand pain assessment and management and to have a commitment to work together. No models of an interfaculty pain curriculum for six health professions were found at the undergraduate level.
**Objective:** The University of Toronto Centre for the Study of Pain organized an Interfaculty Pain Curriculum Committee to develop, implement and evaluate an integrated pain curriculum for students from six Faculties. The evolving model has been implemented over two years.
**Methods:** Students from six disciplines participated in an integrated 20-hour pain curriculum in March 2002 (N=540) and 2003 (N=565). Learning occurred through presentations, patient panel, small group work and use of standardized patients or cases. Group work was facilitated by clinicians (N=63 2002, N=78 2003). Students were assessed in a pre- post-test design on knowledge and beliefs about pain and their understanding of interdisciplinary roles. A paired t-test was used to compare pre- & post-test student scores. Daily surveys were also completed.

Results: For 2002 and 2003, the change in correct scores from the pretest to the post-test was 17% and 16% respectively. The difference in the mean was 6.5 for 2002 and 6.7 for 2003 ($p < 0.05$ for both). Most responders (85%-95%) agreed or strongly agreed that the interfaculty pain curriculum was relevant and informative.
**Conclusion:** The interfaculty pain curriculum was effective in increasing students' knowledge of pain assessment and management and their awareness of related health professional roles in both 2002 and 2003. This program is scheduled to be offered again in March 2004.

# PHARMACY PRACTICE RESEARCH

**PPR No. 1: Evaluation of pharmacist practice in an interdisciplinary primary care team-based setting: Implications for pharmacy education**

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**Purpose:** To evaluate an innovative, functional prototype of pharmacist best-practice in an interdisciplinary primary care team. The goals were to conduct a process evaluation to characterize activities and functions that were needed to meet the needs of the team and explore processes and structures used by the pharmacist to contribute to collaborative medication management (CMM).
**Methods:** This study used mixed (quantitative and qualitative) methods: (a) a retrospective chart review of 105 patients to study the type of drug-related problems and their relationship to pharmacist's role and pharmacist-physician collaboration; and (b) a grounded theory method to data collection and analysis of case scenarios of pharmacist's involvement in patient cases to identify key categories, their properties, and relationships to the pharmacist's role in CMM.
**Results:** The findings revealed that in addition to the philosophy of pharmaceutical care, there are six more principles that need to guide pharmacist practice in CMM. To contribute to CMM pharmacists will need to become competent to perform multiple functions that form a foundation for a repertoire of core expertise. A key finding was the characterization of a reflective approach that defines the nature of involvement and level of pharmacist responsibility in different patient situations which is an essential reflective competency that will need to be acquired by pharmacists if they are to integrate effectively into primary care teams.
**Conclusions:** There is large variability in the functions and the nature of involvement potentially required of a pharmacist in primary care, thus pharmacy students will need to become highly reflective practitioners competent to perform a wide repertoire of specific expanded patient care functions.

Parts of the results were previously presented: CSHP Professional Practice Conference, January 2004. Also parts of the study have been submitted for presentations as poster or oral presentation at the following conferences but results of the reviews are still pending: Qualitative Health Research Conference, April 2004; CPhA Annual Meeting, May 2004; Canadian College of Clinical Pharmacy Conference, June 2004.

**PPR No. 2: Involvement of a community pharmacist research network in evaluating outcomes of bisphosphonate therapy**

*Judith A. Soon*, Mary H.H. Ensom, D.W. Fielding, Marc Levine, James P. McCormack, Selena M. Santi

Collaboration for Outcomes Research and Evaluation ($COR_xE$), Faculty of Pharmaceutical Sciences, University of British Columbia

**Objective:** This research is part of a Health Canada study to develop innovative methods for evaluating outcomes of drug therapy in the clinical setting. $COR_xE$ UBC has established a community pharmacist research network to facilitate the collection of real-time, patient-specific data. The objective is to demonstrate an approach to post-marketing surveillance to evaluate tolerability, compliance and persistence of use among new bisphosphonate users under routine conditions.
**Methods:** Through contacts from previous clinical studies and pharmacy groups, BC community pharmacies were invited to enroll in the research network. Pharmacists recruited new bisphosphonate users into the study, and obtained informed consent, administered the baseline questionnaire and prepared a 14-month patient medication history. Pharmacists could choose to conduct the 1-, 3-, 6- and 12-month follow-up assessments or have them conducted by CORxE UBC personnel.
**Results:** Of the 188 research network pharmacies, 74 enrolled 202 patients who have completed baseline and 1-month assessments. Pharmacists chose to conduct follow-up assessments for 59.5% of patients. Each enrolling pharmacy recruited a mean (±SD) of 2.7 (±2.5) patients (range 1–14). Baseline demographic data: 87.5% female; mean (±SD) age 64.8 (±10.9) years; 92.6% Caucasian; 79.7% high school graduation or higher; 61.4% retired; 59.4% married; and 66.3% had a third party drug insurance plan. Prescribed bisphosphonates were 47.0% Didrocal®, 37.6% Fosamax®, 11.9% Actonel® and 3.5% Didronel®. Baseline and follow-up assessment findings will be provided at presentation.
**Conclusion:** This innovative community pharmacist research network demonstrates the feasibility of utilizing urban and rural pharmacies to collect patient-specific clinical data necessary for the conduct of outcomes research.

**PPR No. 3: Drug utilization review (DUR) for the treatment of asthma**

Joëlle Mimeault, *Diane Blais*

Conseil du médicament, Direction du suivi et de l'utilisation optimale

**Background:** The appropriateness of inhaled $\beta_2$ agonists and leukotriene receptor antagonists (LRA) for the treatment of asthma in Québec was assessed and compared with the results of a first DUR. The initial use of a combined product, containing a long acting inhaled $\beta_2$ agonist (LA) [salmeterol] and an inhaled corticosteroid (IC) [fluticasone], in treating asthma was also documented.
**Methods:** This retrospective study using provincial database included subjects, aged 5 to 45, enrolled in the public drug insurance plan who received, in 2001, at least one prescription of short acting inhaled $\beta_2$ agonists (SA) or LA or LRA. Appropriateness of use was assessed according to criteria developed in consultation with a group of experts and based on the 2001 update of recommendations by the 1999 Canadian Consensus Conference on Asthma.
**Results:** Although there was a significant improvement in the percentages of appropriate frequency of use for SA in 2001 compared to 1997-1998 (41% vs 8%; $p<0.01$) and in the continued use of corticosteroids with LA (35% vs 15%; $p<0.01$), SA are still overused and IC are still underused. Use of LA and LRA was not optimal. Furthermore, the combined product was often used improperly : In the subjects who received this product for the first time, 68% had not received an IC and 42% had received neither an IC or SA for a period of at least 7 months prior to the first prescription.
**Conclusion:** Although an improvement was noted in some respects, utilization of main drugs for treating asthma is not optimal. The *Conseil du médicament*, in collaboration with many healthcare stakeholders, will suggest various strategies to promote better use of asthma therapy.

**PPR No. 4: The provision and reimbursement of home care services by community pharmacists in Canada**

*Jennifer Alissa Lawrence* [1] and A. Kirsten Woodend [2]

[1] University of Saskatchewan, [2]Director, Research, CPhA

**Objectives**: A survey was done to determine the proportion of Canadian community pharmacists providing home care services; roles of community pharmacists in home care; types of patients currently reached; and barriers to providing these services.
**Methods:** The survey was mailed to a random sample of 406 Canadian community pharmacists, stratified by province. Follow-up contacts were made at two weeks and one month in order to maximize returns.
**Results:** The response rate was 49%. Most pharmacies (96%) sold one or more home care products (i.e. monitors, aids, parenterals) and 93% of these pharmacies provided patient training for these products. Only one-quarter (23%) of pharmacists were reimbursed for providing training. Most frequent services provided were compliance packaging, medication reviews, and providing therapeutic alternatives. Prevention/monitoring services were offered by three-quarters of pharmacists, with 34% in patients' homes. Eighteen percent of the pharmacists were reimbursed for providing the above services and most often this was by 3rd party or patient payers. Eighty-one percent of these pharmacists said they spent at least 0.5% of their time each week providing home care services. Most of the respondents (90%) felt that pharmacists must be part of home-care teams in order to ensure optimal drug use in the population receiving home care.
**Conclusions:** While the majority of Canadian community pharmacists said they provide some sort of home care service, a much smaller proportion made home visits. Barriers to providing home care services included lack of reimbursement, time, lack of specialized training, shortages of pharmacists, legal issues, and paperwork. Ways of reducing these barriers need to be identified and implemented.

**PPR No. 5: Pictographic instructions for medications: Do other cultures interpret them accurately?**

*Zahra Sadikali*[1], LCol Régis Vaillancourt[2], John B. Collins[3], Rosemin Kassam[1]

[1]Faculty of Pharmaceutical Sciences, University of British Columbia; [2]Directorate of Medical Policy, Pharmacy Policy and Standards, The Canadian Forces; [3]Department of Education Studies, University of British Columbia

**Background:** Dispensing medication is a major service provided by the Canadian Forces' humanitarian relief missions around the world, often taking place in developing countries. This study tested a set of sixteen pre-developed pictograms to determine whether they accurately communicated the written directions found on medication labels to ethnic respondents who neither speak nor read English, French or Spanish.
**Objective:** (1) To determine whether ethnically diverse individuals could understand the pictogram meanings without additional aids such as verbal instructions or explanations, and (2) to identify appropriate modifications to the pictograms to reduce interpretation errors.
**Method:** Both qualitative and quantitative methods evaluated the pictograms' interpretability among three ethnic groups, Cantonese, Somali and Punjabi. Standard ANOVAs tested for differences due to ethnicity and other demographics.
**Key Findings:** Only four of the 16 initial pictograms tested were interpreted correctly by 80% of participants. Relaxing the criterion from 80% to 50% included eight more. Modifications to problem icon elements further improved interpretation accuracy levels by 22% for a 'best-of-three' tally of 67.15%. Quantity errors were twice as common as timing, administration route or auxiliary instruction errors.
**Conclusions:** Participants could identify particular pictographic symbols they found confusing or ambiguous. Basic education and time since immigration predicted interpretation accuracy better than ethnicity or any other demographic characteristic.

**PPR No. 6: Community-based warfarin co-prescribing and point of care INR testing**

*Wendy A. Leong*,* and London Drugs Anticoagulation Team[#] {Jenny Chiang, Daniel Choi, Nelson Costa, Sanja Ivankovic, Allen Jang, Cecilia Lee, Winnie Lee, Joyce Tan, Robert Tong, John Tse, Annie Wang, Grace Yeung}[#]

Burnaby Research* & University of British Columbia*

**BACKGROUND:** Traditionally, hospital and community pharmacists have avoided warfarin management. The major problems are lack of warfarin expertise, subtherapeutic dosing, inconsistent lab monitoring, etc. For over 20 years, outpatient anticoagulation services have provided safe, effective care in the USA.
**METHODS:** In November 2001, a community anticoagulation management program was implemented in BC at 2 London Drugs locations (Brentwood & Kerrisdale). The outpatient service was created to assist physicians with warfarin management. The program met the 12 Anticoagulation Forum Consensus Guidelines and the College of Pharmacists of BC's approval.
**RESULTS:** The service included training and certification of 10 anticoagulation pharmacists, warfarin co-prescribing, protocols, point-of-care INR testing (POCT), counseling rooms, physician referrals, etc. We created a mobile anticoagulation cart; patient chart (i.e. monitoring forms, warfarin dosing grid, progress notes, etc); a reference binder; cheat sheets; POCT INR log book; patient education materials, etc.
At each brief visit, the patient's INR and daily warfarin dosage were determined. The finger stick method required only 1 drop of blood with the result ready in 2 minutes. The pharmacist co-prescribed and scheduled the patient's next INR.
Audits for safety and efficacy were completed in May 2002, September 2002 and December 2003. Satisfaction surveys were completed for patients, physicians and pharmacy staff with excellent feedback.
**CONCLUSION:** The London Drugs Anticoagulation Service with warfarin co-prescribing and point of care INR testing was safe, reliable, faster and more convenient for physicians and patients.

# SOCIAL & ADMINISTRATIVE RESEARCH

**Soc Admin No. 1: Hot on the Net: pharmaceutical policy/PDAs**

*Timothy Rees*, BSc and Elizabeth Foy

College of Pharmacy, Dalhousie University

**Purpose:** Our goal was to make information on pharmaceutical policy, as well as personal digital assistants (PDAs), more accessible to those who need it. The objectives of this project were to: 1) identify journals and institutions publishing a significant number of articles on pharmaceutical policy as well as relevant websites; 2) identify PDA software websites with programs relevant to pharmacy practice; 3) create two new categories for Drug Information Resources: A Guide for Pharmacists (DIR) and; 4) present a talk to Dalhousie IMPART Drug Use Management and Policy Residents on the topic of pharmaceutical policy on the Internet.
**Methods:** To identify "hot journals" and "hot institutions", six pharmaceutical policy areas were chosen and ideal names of pharmaceutical policy departments were devised. PubMed was searched using these names, limiting citations to English-language and those published in the past five years. Both journals and departments having less than 10 occurrences were rejected. Pharmaceutical policy websites were identified using Google® and by scanning relevant print publications. Articles on PDA drug- and pharmacy-related applications were reviewed to identify software programs, commercial and educational mega-websites and useful "how to do it" references.
**Results:** Thirteen "hot journals" and fourteen "hot institutions" in the area of pharmaceutical policy were identified. The new DIR pharmaceutical policy and PDA categories were uploaded to the Internet in June and September 2003, respectively. The new DIR pharmaceutical policy category was presented to the IMPART Residents on June 24, 2003.
**Conclusion:** Pharmaceutical policy websites and journals and institutions publishing in this area were identified. PDA websites and useful journal articles relevant to pharmacy practice also were identified. As a result, two new categories were added to DIR.

# Section 6:

# Teacher's Conference II:
# "Measuring Educational Outcomes"

**Friday, June 11, 2004**
**1:30 pm – 5:00 pm**
**Grand Ballroom B**

# Teacher's Conference II:
# "Measuring Educational Outcomes"

## OPERATIONALIZING PROGRAM EVALUATION

Speaker: ***David Fielding***, University of British Columbia

During the AFPC Conference in 2002, a workshop was held to discuss and commence developing a blueprint for evaluating the educational programs provided by Faculties of Pharmacy in Canada. At the Conference the next year, a detailed template constructed from that blueprint was presented and generally accepted as having "potential" as a guide for program evaluation. Today's presentation will briefly review the concept of "program evaluation", present an overview of the recommended evaluation template and outline the progress by UBC's Faculty of Pharmaceutical Sciences operationalizing the template in the evaluation of its undergraduate program. As well, others are invited to report on their progress developing and implementing program evaluation mechanisms at their Faculties.

**David Fielding,** EdD
Professor of Pharmacy Practice and Associate Dean, Academic Affairs
Faculty of Pharmaceutical Sciences, University of British Columbia (UBC)

Dr. David Fielding received his BSc(Pharm) and his MSc (Biopharmaceutics) from Dalhousie University and his EdD (Adult Education) from UBC. He joined the Faculty of Pharmaceutical Sciences in 1977. During his academic career he has taught courses focusing on Pharmacy Management and Administration, Pharmacoeconomics, the Canadian Health Care System, Communication Skills Development, Pharmacy Practice, Law and Ethics. He is the recipient of three teaching awards, including a UBC Killam Teaching Award and the AFPC/Bristol-Myers Squibb National Award for Excellence in Education.

Dr Fielding has held a number of administrative positions within the Faculty including Director, Continuing Pharmacy Education; Chair, of the Divisions of Clinical Pharmacy, Pharmacy Administration and Pharmacy Practice. Currently, he is a Professor of Pharmacy Practice and Associate Dean, Academic Affairs.

The principal focus of Dr. Fielding's research since joining UBC has been "evaluation". Initially, his research activity evaluated the design and implementation of pharmacy continuing education programs and their impact on practice behaviours. Later, he developed an international reputation for his work in the development and evaluation of strategies to assess and assure the continuing competence of pharmacists. Most recently, he joined a group focusing on the evaluation of outcomes related to pharmaceuticals and pharmacy services. He is the author or co-author of 77 articles, chapters, abstracts and reports.

## MEASUREMENT OF EDUCATIONAL OUTCOMES: EXPERIENCES FROM THE UNIVERSITY OF HOUSTON CENTER FOR ASSESSMENT

Speaker: ***Julianna Szilagyi***, University of Houston

It is becoming increasingly important to evaluate the success of colleges and teachers in achieving course/program educational objectives. Not only are accreditation agencies requiring proof of assessment and evaluation processes but students and their families insist on knowing that their tuition is money well spent. This session will address issues related to assessment development, processes and use of data for evaluation purposes. An overview of the Center for Assessment at the University of Houston College of Pharmacy will include how it was established, its function and membership. Related to the Center for Assessment will be discussions and descriptions of the various assessment tools that have been developed and how they are used. Examples of the assessment tools will be provided as well as the data collected. Tools have been developed to assess and evaluate student achievement, individual courses, the overall program, alumni and employers. Furthermore, a comparison of collected qualitative and quantitative data and how the data are combined will be presented. Students are also expected to master certain general abilities that should be expected of any graduate regardless of the discipline. Examples of these abilities and how they may be assessed will be provided. Finally, how the data are used and shared will be described. Ample time will be available for questions, discussions and small group work.

**Julianna E. Szilagyi,** PhD
Associate Professor, Director of Assessment
University of Houston, College of Pharmacy

Dr. Szilagyi received her BS and MS in Biology from Cleveland State University. She then earned her PhD in Physiology from The Ohio State University. Upon graduation, she pursued postdoctoral training in the Research Division of The Cleveland Clinic Foundation. Dr. Szilagyi was an assistant professor in the Department of Medicine of Baylor College of Medicine before joining the faculty at the University of Houston College of Pharmacy. Her basic science research area concentrated on cardiovascular neurobiology with special interests in hypertension, central nervous system control mechanisms, opioids, stress and aging. She has been funded by the American Heart Association, NASA and the National Institutes of Health. Dr. Szilagyi was also elected a Fellow of the Council for High Blood Pressure Research of the American Heart Association. Dr. Szilagyi's College of Pharmacy teaching contributions include Organ System Life Sciences (CNS physiology) and Toxicology (household products, naturally occurring, pesticides). Her interests have shifted from basic science research to educational issues including learning, curricular development, the scholarship of teaching and assessment. Dr. Szilagyi served as Director of Institutional Effectiveness for the University of Houston for more than two years before returning to College of Pharmacy full-time. Dr. Szilagyi is founder of the Center for Assessment at the University of Houston and is the current director of the center, which is housed in the College of Pharmacy. Dr. Szilagyi is now collaborating on a project to develop a standardized assessment tool for use by the colleges of pharmacy in Texas.

# Section 7:

# Meet the AFPC Exhibitors:
# A closer look at e-portfolios and program evaluation systems

**Saturday, June 12, 2004**
**8:00 am – 10:30 am**
**Grand Ballroom B**

# AFPC/CSPS Joint Session
# Pharmaceutical scientists and society: Is the supply meeting the demand?

**Saturday, June 12, 2004**
**10:30 am – 11:55 am**
**Grand Ballroom A**

# Meet the Exhibitors: A closer look at e-portfolios and program evaluation systems

The AFPC exhibitors are an important aspect of the 2004 conference providing expertise and tools that not only support the conference themes, but have the potential to support broader AFPC educational initiatives. As a continuation of the AFPC Teacher's Conference, exhibitors have been asked to provide delegates with a closer look at their technology-based e-portfolio and program evaluation software products, and their application to pharmacy education. Representatives from Academic Management Systems and Nuventive will provide short presentations on their products followed by an audience Q & A session.

# AFPC/CSPS Joint Session
# Pharmaceutical scientists and society: Is the supply meeting the demand?

**Chairs:**
***Frank Abbott***, AFPC, Vancouver, BC and ***Fakhreddin Jamali***, CSPS, Edmonton, Alberta

**Panelists:**
***Rav Kumar***, Vice President, Regulatory Affairs & Pharmaceutical R&D, GlaxoSmithKline Canada Inc.
***Brian Foster***, Senior Science Officer, Therapeutic Products Directorate, Health Canada
***Bob Sindelar***, Dean, Faculty of Pharmaceutical Sciences, University of British Columbia
***Jacques Turgeon***, Dean, Faculty of Pharmacy, University of Montreal

***Doctoral Shortages in Academic Pharmacy in Canada: Is there a problem and if so what do we do about it?*** It has been estimated that pharmacy faculty shortages will continue to grow over the next 10-15 years. These shortages will have an impact on the ability of Faculties to increase enrolments and to provide the quality and breadth of science and training that we are expecting tomorrow's pharmacy graduates to possess. Recruitment of quality faculty in Pharmacy is already a challenge and with pharmacy student graduates declining careers in academia, this will add further to the dilemma of acquiring competent academic personnel. Panel members Frank Abbott, Bob Sindelar, and Jacques Turgeon will speak to the nature and extent of the problem, the initiative of Pharmacy organizations with Human Resources Development Canada (HRDC), and solutions to increasing the numbers of our graduate students who choose a career in academic Pharmacy.

Frank Abbott, PhD
Executive Director
Association of Faculties of Pharmacy of Canada

Bob Sindelar, PhD
Dean, Faculty of Pharmaceutical Sciences
University of British Columbia

Jacques Turgeon, PhD
Doyen, Faculte de pharmacie
Université de Montréal

# Section 8:

# Pharmacy Practice Research Symposium

**Saturday, June 12, 2004**
**2:00 pm – 5:00 pm**
**Grand Ballroom B**

Sponsored by: 

# AFPC Pharmacy Practice Research Symposium 2004
# "The arrow goes both ways: Linking pharmacy practice research with curriculum"

Sponsored by: 


**2:00 pm** **INTRODUCTION TO THE SESSION BY THE CHAIR**
***Lisa Dolovich***, Department of Family Medicine, McMaster University

Pharmacy education aims to produce pharmacists who can meet the drug related needs of society. Pharmacy practice research is research that attempts to inform and understand pharmacy and the way in which it is practiced. The objectives of this symposium are to describe some initiatives that link pharmacy practice and pharmacy education, to discuss how pharmacy practice research can inform pharmacy education and to discuss actions that can be taken within institutions to strengthen the link between pharmacy education and pharmacy practice.

**2:15 pm** **EXPERIENCES WITH THE UBC SPEP PROGRAM**
***Rosemin Kassam***, Faculty of Pharmaceutical Sciences, University of British Columbia

**Background:** In response to changing health care needs, pharmacy schools across North America are challenged to provide students with opportunities to hone the full range of competencies necessary to practice pharmaceutical care (PC). As faculties adopt PC practice into their experiential curricula, they are obligated to generate and share research that will help the profession understand how experiential education helps meet educational outcomes and address societal needs.
**Objective:** This presentation highlights several program evaluation initiatives currently underway at UBC to assess (1) the impact of the senior year community pharmacy-based PC clerkship program on students' skills, knowledge and attitude related to PC, (2) how students' skills translate into practice, (3) how in-store pharmacists acquire information and skills to become preceptors and clinical instructors, and (4) how patient satisfaction with pharmacy services excels in stores supporting the enhanced PC clerkship program.
**Methods:** A prospective, comparison-group design was used to implement and evaluate the enhanced PC clerkship course.
**Results:** Data from on-going SPEP program evaluation suggest that students in the enhanced program experienced greater improvement in their PC skills than did students in the traditional program ($M=72$ vs 58, $F=9.31$, $p<0.004$); they voiced stronger endorsements of the principles of PC ($M=124$ vs 115, $F=33.63$, $p<0.000$); and they provided comprehensive PC to a significantly larger number of patients ($M=13$ vs 1 vs 1, $F=210.52$, $p<0.000$). These results were affirmed by their clerkship preceptors whose own training produced 27% gains in their preceptor skills ($t=7.81$, $df=19$, $p<.000$). Furthermore, patients who reported experiencing a consultation with an in-store pharmacist or pharmacy student showed higher overall satisfaction scores than those reporting no such consultation (4.12 vs 3.26; $F=37.92$, $p<0.000$).
**Conclusion:** Our experience demonstrates that the SPEP provided students with a richer experience to develop their PC-related competencies, and that this experience resulted in positive outcomes for patients who came to recognize and expect such improved care.

## 2:45 pm INTEGRATING FAMILY MEDICINE AND PHARMACY TO ADVANCE PRIMARY CARE THERAPEUTICS: DEVELOPMENT OF A TRAINING AND MENTORSHIP PROGRAM

***Zubin Austin*** and ***Lisa Dolovich***, Leslie Dan Faculty of Pharmacy, University of Toronto

IMPACT is a multi-site demonstration project that involves 7 pharmacists, approximately 70 physicians and covers approximately 150,000 patients. The goal of IMPACT is to improve patient outcomes by optimizing drug therapy through a community practice model that integrates pharmacists into family practices. Within each practice site, a pharmacist with special clinical training works 2.5 days per week (for 1 year) and coordinates a multifaceted intervention aimed at optimizing drug therapy to improve patient outcomes (blood pressure, cholesterol, diabetes, pain control, constipation, etc.) One of the supports put in place for IMPACT pharmacists was a weekend training workshop and ongoing support from a mentorship program. The Family Health Simulator (FHS) formed the centrepiece of the IMPACT Training workshop. The FHS was conceived as a simulation of primary care practice for pharmacists; while patient simulations are now commonplace in pharmacy education, practice-based simulations have not been previously reported. Needs assessment research identified knowledge and skills gaps related to interprofessional communication, shared decision making, and complex patient management. Findings suggest the Family Health Simulator provides a unique and effective vehicle for teaching and assessing of competencies required of pharmacists in primary care settings. Though logistically challenging to develop and implement, the FHS was an important component of transitional training for pharmacists entering primary care settings.

## 3:15 pm INNOVATIVE PHARMACY PRACTICE: HOW CAN INNOVATION GUIDE THE TRAINING OF THE NEXT GENERATION OF PHARMACY PRACTITIONERS?

***Judith Soon***, Collaboration for Outcomes Research and Evaluation ($COR_xE$), Faculty of Pharmaceutical Sciences, University of British Columbia

**Objective:** Emergency contraception (EC) is a well established, but underutilized, method of reducing the risk of unwanted pregnancies. In December 1999, BC pharmacists were the first in Canada to be granted independent prescriptive authority for EC. To train practitioners in this innovative new role, the BC Pharmacy Association, the College of Pharmacists of BC and $COR_xE$ UBC developed a coordinated approach to EC training, certification and outcomes evaluation.
**Methods:** Community practitioners were invited to be trained to provide standardized three-hour EC workshop-format educational sessions to interested pharmacists in geographically-diverse communities. Using role-playing and small group discussions, training sessions educated pharmacists to: understand the role of EC in pregnancy prevention; be aware of the mechanisms of action of EC; be able to identify candidates for EC; be familiar with patient counseling techniques and community referral sources. In addition, undergraduate students were encouraged to receive EC training, had the opportunity to be research assistants with the EC research program, and received updated EC research findings as a component of their curriculum.
**Results:** Ninety volunteer trainers provided 186 training sessions at 55 different locations throughout BC in the first two years of the EC program. During this time, 1456/2500 (58%) community pharmacists and 76 undergraduate students completed requirements for certification. Feedback from the 62% of certified pharmacists who completed a satisfaction survey was positive and constructive; follow-up training in counseling techniques for difficult situations was subsequently provided.
**Conclusion:** A training program provided to BC community pharmacists and undergraduate students enabled expansion of their role in pharmacy practice to incorporate timely provision of EC.

## 3:30 pm COFFEE BREAK

**4:00 pm** **SUBMITTED PRESENTATIONS** (15 MINUTES EACH)**:**

## Evaluation of Pharmacist Practice in an Interdisciplinary Primary Care Team-based Setting: Implications for Pharmacy Education

***Jana M. Bajcar[1,2], Natalie Kennie[1,2], Tom Einarson[1]***. [1]Leslie Dan Faculty of Pharmacy, University of Toronto and [2]Department of Family and Community Medicine, St. Michael's Hospital, Toronto

**Purpose**. To evaluate an innovative, functional prototype of pharmacist best-practice in an interdisciplinary primary care team. The goals were to conduct a process evaluation to characterize activities and functions that were needed to meet the needs of the team and explore processes and structures used by the pharmacist to contribute to collaborative medication management (CMM).
**Methods**: This study used mixed (quantitative and qualitative) methods: (a) a retrospective chart review of 105 patients to study the type of drug-related problems and their relationship to pharmacist's role and pharmacist-physician collaboration; and (b) a grounded theory method to data collection and analysis of case scenarios of pharmacist's involvement in patient cases to identify key categories, their properties, and relationships to the pharmacist's role in CMM.
**Results**: The findings revealed that in addition to the philosophy of pharmaceutical care, there are six more principles that need to guide pharmacist practice in CMM. To contribute to CMM pharmacists will need to become competent to perform multiple functions that form a foundation for a repertoire of core expertise. A key finding was the characterization of a reflective approach that defines the nature of involvement and level of pharmacist responsibility in different patient situations which is an essential reflective competency that will need to be acquired by pharmacists if they are to integrate effectively into primary care teams.
**Conclusions**: There is large variability in the functions and the nature of involvement potentially required of a pharmacist in primary care, thus pharmacy students will need to become highly reflective practitioners competent to perform a wide repertoire of specific expanded patient care functions.

Parts of the results were previously presented: CSHP Professional Practice Conference, January 2004. Also parts of the study have been submitted for presentations as poster or oral presentation at the following conferences but results of the reviews are still pending: Qualitative Health Research Conference, April 2004; CPhA Annual Meeting, May 2004; Canadian College of Clinical Pharmacy Conference, June 2004.

## Experiences with Collaborative Practice among Pharmacy and Nutrition Students Assessing a Standardized Patient

***Roy Dobson, Jeff Taylor, Jane Cassidy, Doreen Walker.*** College of Pharmacy and Nutrition, University of Saskatchewan

**Study Objective:** To determine student perceptions of participating in an interdisciplinary team-based patient assessment lab.
**Methods:** Participants consisted of 21 third year Nutrition students (100%) and 54 fourth year pharmacy students (73%). Groups consisted primarily of pharmacy-nutrition (PN) or pharmacy-pharmacy pairings (PP). Due to scheduling constraints, there were also two groups of three pharmacy students (PPP). Students completed a questionnaire relating to their experience at the end of the assessment lab. Analysis included frequency and comparative statistics. Comments arising from open-ended questions were collected into themes.
**Results:** Most students agreed: the objectives of the lab were clear; the lab objectives had been met; they were able to obtain a sufficient range of information from the patient; their partner's knowledge and skills increased their ability to gather information; it was easy to work together; and working together was beneficial. Themes emerging from written

comments included: the quality of the simulated practice setting; the scope of the patient interview; awareness of the role of another health professional; enhanced clinical knowledge; and interdisciplinary teamwork.

**Discussion:** The assessment lab's collaborative approach was well received by the students, with most students reporting a real benefit from working with another person. Comments indicated enthusiasm for the scenario and the opportunity to work with "real" patients. Comments also suggested students working with another discipline had gained in their appreciation for the contributions made by another health profession. The findings illustrate the need to develop opportunities for interdisciplinary practice and shared learning. Future interdisciplinary labs and activities are being planned with expansion to other disciplines outside the College of Pharmacy and Nutrition.

**4:30 pm** **PANEL TO LEAD LARGE GROUP DISCUSSION AND DEVELOPMENT OF RECOMMENDATIONS FOR USE AT EACH FACULTY**

Panelists: ***Lisa Dolovich, Rosemin Kassam, Zubin Austin, Judith Soon, Jana Bajcar, Roy Dobson***

**5:00 pm** **ADJOURN**

**Lisa Dolovich,** BScPhm, PharmD, MSc
Associate Professor, Department of Family Medicine, McMaster University
Ambulatory Care Pharmacotherapy Specialist, St. Josephs Healthcare
Associate Director, Centre for Evaluation of Medicines

Dr. Lisa Dolovich is a pharmacist who obtained her Bachelor of Science in Pharmacy and Doctor of Pharmacy degrees from the Faculty of Pharmacy, University of Toronto. She completed a Canadian Society of Clinical Pharmacology Fellowship at the Centre for Evaluation of Medicines in 1998 and completed her Master of Science degree in Health Research Methodology at McMaster University.

Lisa currently divides her time between the Centre for Evaluation of Medicines and the Pharmacy Department at St. Joseph's Healthcare, Hamilton Lisa leads the Team for Individualizing Pharmacotherapy in Primary Care for Seniors (TIPPS) research program and runs a Medication Assessment Clinic at St. Joseph's Healthcare Hamilton together with Dr. Mitchell Levine.

**Rosemin Kassam,** BScPharm, PharmD
Assistant Professor; Director, Structured Practice Education Programs (SPEP)
Faculty of Pharmaceutical Sciences, University of British Columbia

Dr. Rosemin Kassam obtained her Bachelor of Science in Pharmacy from the University of Alberta. She completed a hospital residency at the Royal Alexandra Hospital in Alberta and obtained her Doctor of Pharmacy degree from the University of Toronto. Rosemin is currently an Assistant Professor and Director of the Structured Practice Education Program at the University of British Columbia, and a Pharmacotherapeutic Specialist with the Vancouver Coastal Health Authority Geriatric Diabetes Program. She brings extensive practice experience to her current position. She has worked in both community and hospital pharmacy, and was the project manager and clinical coordinator of the Pharmaceutical Care Research and Education Project in Alberta prior moving to BC. Rosemin is currently involved in educational and pharmacy practice research, and as Director of SPEP, her primary interest is to assess how experiential education helps meet educational outcomes and address societal needs.

**Zubin Austin,** MSc, MBA, MEd, PhD
Assistant Professor, Leslie Dan Faculty of Pharmacy, University of Toronto

Zubin Austin is Assistant Professor at the Leslie Dan Faculty of Pharmacy, University of Toronto, and the inaugural chair-holder of the OCP Professorship in Pharmacy. A graduate of the University of Toronto, Zubin has completed Masters degrees in Business Administration, Information Science and Education, as well as a PhD in Cognitive Science. Currently, he co-ordinates undergraduate courses in pharmacy practice and applied pharmaceutical sciences, and teaches in graduate courses in health professions education. He has an active research program and supervisors several MSc, MEd, and PhD students. He has published extensively in the area of health professions and pharmacy education, and has been an invited speaker at numerous national and international conferences. As Principal Investigator, he was instrumental in development of the International Pharmacy Graduate program at the University of Toronto, a bridging education program designed to assist foreign-trained pharmacists in acquiring the knowledge and skills necessary to meet Canadian standards of practice. This program has been recognized as a "best-practices" model for immigrant-integration in Ontario. Zubin is also an award-winning educator, having received teaching recognition from both the Association of Faculties of Pharmacy of Canada and the American Association of Colleges of Pharmacy.

**Judith Soon,** BSc, MSc, Diploma (*Epidemiology & Biostatistics)*, PhD, FCSHP
Assistant Professor, Faculty of Pharmaceutical Sciences, University of British Columbia

Dr. Soon is currently an Assistant Professor at the UBC Faculty of Pharmaceutical Sciences and Research Associate of the Collaboration for Outcomes Research and Evaluation (CORxE UBC) initiative. She is also a Clinical Assistant Professor at the University of Washington with the School of Pharmacy. From 1978 to 1991, Dr. Soon developed and managed a province-wide consultant clinical pharmacy program for long-term care facilities and was a consultant to the Continuing Care Division of the BC Ministry of Health. In 1991, she began graduate studies at UBC and McGill University, with a focus on pharmacoepidemiology, pharmaceutical outcomes research using health care databases, and the effectiveness of geriatric pharmacotherapy. In 1999, Dr. Soon began teaching in the Geriatric Pharmacy Practice Program at the University of Washington and in 2000 joined the Faculty at UBC. The primary focus of Dr. Soon's research is on the use of provincial linked databases in combination with field studies to study drug utilization and clinical outcomes to inform clinical decision-making and health policy. Clinical areas of interest include geriatric depression, osteoporosis and women's health issues. In 1999, Dr. Soon began developing a research network to facilitate the outcomes evaluation of pharmacist-initiated emergency contraception in BC. The evaluation currently encompasses 14 different studies, including linked database analyses with PharmaNet, MSP and Hospital Separations data, a field study using informed consents for treatment, multiple surveys of non-prescription provision, a pharmacoeconomic evaluation, and qualitative surveys of barriers to access to emergency contraception. Dr. Soon coordinates the $COR_xE$ UBC province-wide community pharmacist research network used to collect data for two other $COR_xE$ UBC projects "*Effectiveness of Bupropion for Smoking Cessation"* and "*Outcomes of Bisphosphonate Therapy in the Treatment of Osteoporosis".* Dr. Soon has received numerous research awards from CSHP, CPhA, CFP, UBC, and ISPE, has published articles and abstracts on adverse drug reaction monitoring and depression in the long-term care setting, and more recently in the area of emergency contraception.

**Jana M. Bajcar,** BScPhm, MScPhm, EdD, FCSHP
Associate Professor, Leslie Dan Faculty of Pharmacy and Faculty of Medicine, University of Toronto

Jana Bajcar is an Associate Professor in the Leslie Dan Faculty of Pharmacy and Faculty of Medicine (Department of Family and Community Medicine) at the University of Toronto and also is a Primary Care Pharmacist in the Department of Family and Community Medicine, St. Micheal's Hospital, Toronto. She received her undergraduate and graduate pharmacy degrees from the University of Toronto and her Doctor of Education degree (Health Care Specialization) from Nova Southeastern University, USA. She has held clinical and administrative positions in teaching and non-teaching hospitals and has been involved in developing and studying the implementation of pharmaceutical care models of practice in the critical care and in the family physician office practices. She has been involved in pharmacy education for the last 14 years in the Undergraduate and PharmD programs and for eight years she was the Director of the Doctor of Pharmacy Program at the University of Toronto.

Dr. Bajcar's current research focus is on the reduction of preventable medication-related problems from multiple perspectives (different health care professionals and patients) and in diverse patient populations (across illnesses, practice settings, ages, socioeconomic and mental status). One research focus is on the development of targeted pharmacist practice models and practice tools. A current research project is focusing on defining potential pharmacist practice models within a team-based primary care setting. Within pharmacy practice, education has been isolated as an evolving focal point for inquiry, specifically the study of strategic education models for medication-related instruction for various audiences. Within this area she is currently involved in several studies that focus on educating and supporting patients and their families to develop and maintain an effective medication-taking practice (e.g. psychiatric adolescent patients and their parents, socially disadvantaged diabetic

patients, elderly patients on chronic medications) and through these studies she is investigating patient-centered approaches to patient mediation-taking education. The second research focus is on pedagogical methods and is correlative to the pharmacy practice research and how each one informs the other.

**Roy Dobson,** PhD
Assistant Professor, College of Pharmacy and Nutrition, University of Saskatchewan

Dr. Dobson is an Assistant Professor of Pharmacy Administration in the College of Pharmacy and Nutrition, University of Saskatchewan. Dr. Dobson holds a Bachelor of Science in Pharmacy from Dalhousie University, and a Master of Business Administration and a Doctor of Philosophy in Interdisciplinary Studies from the University of Saskatchewan. Dr. Dobson's research interests include health care human resource management and development, drug and health care policy, and drug utilization. Current research projects include two CIHR-funded National studies: *"Interdisciplinary collaboration in community practice"* and *"The role of profession equity in the work of physicians"*. In addition to his teaching and scholarly activities, Dr. Dobson also serves as a member of the Formulary Committee of Saskatchewan Health and is a Member of the Board of Saskatchewan Blue Cross. Dr. Dobson is also a Member of the Council for the Association of Faculties of Pharmacy of Canada. As a consultant, Dr. Dobson has served as a strategic planning facilitator with various organizations.

# Section 9:

# Conference Exhibitors

# Academic Management Systems


Academic Management Systems provides management software for health professions schools, colleges, and universities. Our focus is on admissions management, curriculum analysis, course assessment, and CV management. We are located in Amherst, New York and we are a subsidiary of Liaison International, Inc.

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# Nuventive


Nuventive is an education-focused technology and consulting company with a mission to provide individuals, educators, parents, and institutions with the tools and services they need to effectively examine, improve, and manage the learning process.

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