



**Centre for Community Pharmacy Research and  
Interdisciplinary Strategies (COMPRIS)  
Annual Report  
2007/08**

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## DIRECTOR'S REMARKS

We are pleased to issue the fourth Annual Report for the Centre for COMMunity Pharmacy Research and Interdisciplinary Strategies (c/ COMPRIS). The year 2007-08 saw us complete three research studies, start four new studies, and continue planning for an Alberta-wide chronic disease management demonstration project. COMPRIS faculty again made numerous presentations, won several awards and published some very important articles.



First of all, congratulations to **Dr. Tammy Bungard** who was promoted from Assistant Professor of Medicine to Associate Professor with tenure in the Faculty of Medicine and Dentistry and to **Dr. Scot Simpson** who was recently promoted from Assistant Professor to Associate Professor with tenure, in the Faculty of Pharmacy and Pharmaceutical Sciences.

The first pharmacists in Canada to be granted additional prescribing authority under the new Alberta Health Professions Act were announced in late 2007. The Alberta College of Pharmacists conducts a very extensive review and validation process for certification of pharmacists for additional prescribing authority. Of 15 successful pharmacists in Alberta, five, a full one-third, are associated with EPICORE Centre/COMPRIS. These include **Tammy Bungard, Rene Breault, Glen Pearson, Nesé Yuksel and Sheri Koshman**. We are very proud of their accomplishment and we congratulate each of them.

The OsteoPharm study demonstrated positive outcomes from pharmacist intervention. Twice the number of patients in the intervention group received BMD testing vs. usual care and twice as many patients received prescriptions for osteoporosis medications..

The COLLABORATE (Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment) study was completed and demonstrated positive outcomes of hospital pharmacist involvement. Team-based care including a clinical pharmacist, improved the overall quality of medication use and reduced rates of hospital readmission.

A study using IMS prescription data indicate that a simple intervention, change from two or more single drug entity treatments of hypertension to combination products, would not only reduce expenditures but would likely improve adherence to therapy. Changes could be initiated by a pharmacist and resultant savings could be used to fund pharmacist run chronic disease management programs for patients with high blood pressure.

Our initiative “Students Leading Pharmacy Practice Change: A Guide for Students to Negotiate for Patient-Centred Care” provided valuable assistance to new pharmacist graduates seeking employment in a progressive clinically focused work environment. Many positive comments have been received from graduates from across Canada.

A systematic review, recently published in the Archives of Internal Medicine, of pharmacist care in heart failure demonstrated decreased hospitalization rate associated with pharmacist

collaborative care. This benefit projects to a 30% reduction in hospitalization of heart failure patients.

This year we began utilizing a \$100,000 grant from the Canadian Foundation for Pharmacy to develop a remuneration model for clinical pharmacist services. The first component of this project was conducting a systematic review of remuneration systems. This complex review was published in the April/May 2008 Canadian Pharmacists Journal. The second component of this project involved gathering opinions and input by conducting focus groups with community pharmacists and a web-based survey of Alberta pharmacists. Some very interesting results have recently been presented to the CPhA Annual Meeting in Victoria and several publications have been submitted or will be submitted to the Canadian Pharmacists Journal.

As you know, leading change in pharmacy practice and promoting health policy change to facilitate sustained provision of proven clinical interventions by pharmacists has been a major goal of COMPRIS. In February of 2007, COMPRIS submitted the proposal entitled “**Improving Access and Quality of Care for Patients with Diabetes by Engaging Pharmacists in Chronic Disease Management**” to government. Although Alberta Health and Wellness indicated support for the proposal, they referred COMPRIS to the Institute of Health Economics to enhance the economic evaluation component of the project. With the excellent advice and assistance of the Institute, and in particular Executive Director and CEO **Dr. Egon Jonsson** and Economist **Andy Chuck**, a revised business case was submitted to government on May 5, 2008.

I must admit to sometimes feeling frustrated with the slow pace of change in community pharmacy practice. While so many of our research projects have clearly demonstrated the benefits of pharmacist involvement in direct patient care, there is very little uptake by pharmacists. We realize that the reasons are multifactorial and that change will require the focused efforts of pharmacy leaders supported by a new remuneration model for clinical pharmacy services.

Nonetheless, it is gratifying to frequently learn about specific instances of the use and application of the results of COMPRIS studies. For example, in January 2008, I was informed that a literature review by Scopus, the largest abstract and citation database of research literature and web sources, found that our initial work, the SCRIP study, has been cited 79 times in the literature. This is truly phenomenal and leads me to believe that our work is and will continue to be an important part of the process that leads to widely adopted and sustained practice change.

It is also gratifying that, as I conduct the “leading change” presentation and other presentations, I continually encounter pharmacists in various regions of Canada who express strong support for what we were doing and many ask me to speak at their own annual meetings. They express the observation that these are the messages they have been trying to convey for some time. In light of this growing interest in COMPRIS initiatives, we have decided to expand more nationally with COMPRIS, in terms of pharmacist research partners and by engaging the various Colleges of Pharmacists and Provincial Associations. As you know, COMPRIS already has a nation-wide cadre of research collaborators and faculty members.

I would like to take this opportunity to again thank our sponsors for their ongoing support of COMPRIS. Through your membership fees, COMPRIS pays its basic infrastructure costs. Additionally, many of our projects are funded directly by sponsors who have an interest in a particular area of pharmacy practice. Thank you very much to AstraZeneca Inc., Bristol-Myers

Squibb/sanofi-aventis, Merck-Frosst Canada, Apotex Inc, Bayer HealthCare, ManthaMed and Overwaitea Food Group.

Thank you again to all partners and collaborators for your support for COMPRIS. We look forward to working with you during 2008-09.

Respectfully Submitted,

Ross T. Tsuyuki, BSc(Pharm), PharmD, MSc, FCSHP, FACC  
Professor of Medicine and Director,  
EPICORE Centre/COMPRIS  
Professor and Merck Frosst Chair in Patient Health Management  
Faculty of Pharmacy and Pharmaceutical Sciences  
University of Alberta

## INTRODUCTION

Established within the University of Alberta in 2003, the Centre for **COMmunity Pharmacy Research and Interdisciplinary Strategies** (c/ COMPRIS) is a unique multidisciplinary health research centre with a focus on practice based research promotes inter-professional care, professional development, and evaluation to improve health outcomes. COMPRIS is supported by the Faculties of Medicine and Pharmacy of the University of Alberta, and sponsored by unrestricted grants AstraZeneca Canada Inc., Bristol-Myers Squibb/sanofi aventis Ltd, Merck Frosst Canada Ltd., Overwaitea Food Group (Save-On Foods Pharmacies), Bayer HealthCare Pharmaceuticals, ManthaMed Inc., and Apotex Inc. COMPRIS is a subsidiary of the Epidemiology Coordinating and Research (EPICORE) Centre and shares space and resources, and purchasing some services from the parent centre.

For more information on the activities of EPICORE Centre and COMPRIS, please see the website: [www.epicore.ualberta.ca](http://www.epicore.ualberta.ca).

## VISION/MISSION

### VISION STATEMENT

To be the leading internationally recognized coordinating centre for pharmacy practice research.

*We envision pharmacists engaged in patient-centered care, supported by high quality research evidence of its efficacy, empowered in their work environment, continuously developing their professional skills, and recognized for their important contributions to patient care.*

### MISSION STATEMENT

To demonstrate, support, and promote the development of new and renewed roles for pharmacists within the interdisciplinary health care team.

### GOALS AND OBJECTIVES

1. To design, implement, analyze, publicize, and promote pharmacy practice research,
2. To act as a resource for practice research stakeholders to conduct, promote, apply and integrate research, education, training and practice,
3. To identify and steward resources (human, intellectual and financial) in support of practice research,
4. To apply clinical trials methodology to examine the impact of a) collaboration between pharmacists, physicians and other health care professionals, and b) pharmacist intervention in disease management programs,
5. To deliver education and training in practice research,
6. To advocate and support translation of research results into Canadian health care policy and sustained pharmacy practice change.

## STRUCTURE OF COMPRIS

### MANAGEMENT

#### Director

**Ross Tsuyuki**, BSc (Pharm), PharmD, MSc, FCSHP, FACC  
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#### Health Policy Consultant

**David Bougher**, BSP, MHSA  
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Edmonton, Alberta  
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[www.epicore.ualberta.ca](http://www.epicore.ualberta.ca)

### FACULTY

COMPRIS has access to a unique cadre of staff with knowledge and experience in a wide range of health research and clinical expertise:

- **Ross Tsuyuki**, BSc(Pharm), PharmD, MSc, FCSHP, FACC (Professor – Medicine/Faculty of Pharmacy & Pharmaceutical Sciences, University of Alberta, Director – EPICORE Centre)
- **Tammy Bungard**, BSP, PharmD (Associate Professor – Medicine, Director – Anticoagulation Management Services, University of Alberta)
- **Lisa Dolovich**, PharmD, MSc (Associate Professor, McMaster University)
- **David Gardner**, PharmD, MSc (Associate Professor, Department of Psychiatry & College of Pharmacy, Dalhousie University)
- **Jeffrey A. Johnson**, BSP, MSc, PhD (Professor - Public Health Sciences, University of Alberta)
- **Kathryn King**, RN, PhD (Professor - Faculty of Nursing, University of Calgary)

- **Sheri Koshman**, BScPharm, PharmD, ACPR (Assistant Professor, Division of Cardiology, University of Alberta)
- **Sumit R. Majumdar**, MD, MPH, FRCPC (Associate Professor -Medicine/General Internist, University of Alberta)
- **Mark Makowsky**, BSP, PharmD, ACPR (Assistant Professor -Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta)
- **Carlo Marra**, PharmD. Ph.D., FCSHP (Assistant Professor, Faculty of Pharmaceutical Sciences and Pharmaco-Economist, Centre for Clinical Epidemiology and Evaluation, University of British Columbia)
- **Finlay A. McAlister**, MD, MSc, FRCPC (Associate Professor -Medicine/General Internist, University of Alberta)
- **Stephen Newman**, MD, MSc (Professor, School of Public Health)
- **Lyne Lalonde**, BPharm, PhD (Professeur adjoint Faculté de pharmacie, Université de Montréal)
- **Glen Pearson**, BSc, BSP Pharm, PharmD (Associate Professor – Cardiology, Co-Director, Cardiovascular Risk Reduction Clinic, University of Alberta)
- **Maricel Reddy**, BHE, RD (Clinical Dietician, Capital Health Region)
- **Marcelo Shibata**, MD (Clinical Instructor – Medicine, University of Alberta and Cardiologist, Misericordia Hospital)
- **Terri Schindel**, BSP, MCE, FCSHP (Director, Outreach Education, Faculty of Pharmacy & Pharmaceutical Sciences, University of Alberta)
- **Scot Simpson**, PharmD, MSc, (Associate Professor, Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta)
- **Jeff Taylor**, BSP, PhD (Associate Professor, College of Pharmacy and Nutrition, University of Saskatchewan)
- **Nesé Yuksel**, Pharm.D. (Associate Professor, Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta)

#### RESEARCH ADVISORY COMMITTEE

The Centre's sponsors and collaborators participate in its activities through membership in a Research Advisory Committee (Terms of Reference Appendix 1). Membership of the Research Advisory Committee follows:



Dr. Franco Pasutto	Dean	Faculty of Pharmacy and Pharmaceutical Sciences 3118 Dentistry/Pharmacy Centre University of Alberta Edmonton, AB T6G 2N8
Dr. Tom Marrie	Dean	Faculty of Medicine and Dentistry 2J2.02 WMC University of Alberta Edmonton, AB T6G 2R7
Dr. Jeff Poston	Executive Director	Canadian Pharmacists Association 1785, prom. Alta Vista Dr. Ottawa, ON K1G 3Y6
Mr. Greg Eberhart	Registrar	Alberta College of Pharmacists 1200, 10303 Jasper Avenue Edmonton, AB T5J 3N6
Mr. Keith Stewart	Chief Executive Officer	Alberta Pharmacists' Association 1800 – 10303 Jasper Avenue NW Edmonton, AB T5J 3N6
Mr. Murray McKay	Project Leader Quality Improvement , Health Accountability Division Research and Evidence Branch	Alberta Health and Wellness 22nd Floor , TELUS Plaza North Tower 10025 Jasper Ave Edmonton, AB T5J 1S6
Mr. Steve Long	Executive Director Pharmaceuticals and Life Sciences Branch	Strategic Directions Division Alberta Health and Wellness 18th Floor, TELUS Plaza North Tower 10025 Jasper Avenue Edmonton, Alberta T5J 1S6
Dr. William Hyndyk	Senior Medical Advisor	Alberta Medical Association 12230 – 106 Avenue Edmonton, AB T5N 3Z1
Ms. Marianne Stewart	Vice President and Chief Operating Officer, Primary Care	Capital Health 10216 - 124 Street Edmonton, AB T5J 1S6
Dr. Lynn Redfern	Director, Policy and Practice	College and Association of Registered Nurses of Alberta 1620 – 168 Street Edmonton, AB T5M 4A6
Mr. Kirk Lange	Pharmacy Initiatives Marketing Manager, West	AstraZeneca Canada Inc.
Ms. Christine Chin		Bristol-Myers Squibb/Sanofi-Aventis
Ms. Lori-Jean Manness	Manager of Patient Health	Merck Frosst Canada Ltd. 55 Fairgrove Bay Winnipeg, MB R2R 1C9
Mr. Ralph Lai	Director, Pharmacies	Overwaita Food Group 19855 - 92A Avenue Langley, BC V1M 3B6
Mr. Jamie Davis	Director, Government Affairs & Patient Access	Bayer HealthCare Pharmaceuticals 14720 – 86 Ave Edmonton, AB T5E 4B8
Mr. Peter Mantha	President	ManthMed Inc. Unit 6 - 6695 Millcreek Drive Mississauga, ON L5N 5R8
Dr. Karen Sullivan	Manager, Professional Services	Apotex Inc. 16 Scenic Ridge Green NW Calgary, AB T3L 1V7
Dr. Ross Tsuyuki	Director, COMPRIS	EPICORE Centre University of Alberta 220 College Plaza Edmonton, AB T6G 2C8
Mr. Chuck Wilgosh	Business Manager, COMPRIS	EPICORE Centre University of Alberta 220 College Plaza Edmonton, AB T6G 2C8
Mr. David Bougher	Consultant – Health Policy	EPICORE Centre University of Alberta 220 College Plaza Edmonton, AB T6G 2C8

## SPONSORS

- Merck Frosst Canada Ltd
- AstraZeneca Canada Inc
- Bristol-Myers Squibb / sanofi-aventis
- Bayer HealthCare Pharmaceuticals
- Apotex Inc.
- Overwaitea Food Group
- ManthaMed (Associate)

## COLLABORATORS

- Alberta Pharmacists' Association
- Faculty of Pharmacy and Pharmaceutical Sciences
- Faculty of Medicine and Dentistry
- Alberta College of Pharmacists
- Alberta Medical Association
- Alberta Health and Wellness
- College and Association of Registered Nurses of Alberta
- Capital Health Region
- Capital Health Region Pharmacists Association
- Canadian Pharmacists Association

## **PARTNERSHIPS**

COMPRIS continues to maintain a collaborative relationship with the following partners:

### **EPICORE (Epidemiology Coordinating and Research) Centre, University of Alberta**

EPICORE Centre provides infrastructure support for COMPRIS including study design, clinical trial co-ordination, logistics, and data management.

## **University of Alberta, Faculty of Pharmacy and Pharmaceutical Sciences**

COMPRIS's mission and objectives continue to complement and enhance the University and Faculty priorities, in particular those of the Faculty of Pharmacy and Pharmaceutical Sciences, related to education, research and community service. In this regard, a high priority for the Faculty is to be a leader in practice-related research programs in pharmaceutical sciences and of pharmacy practice. With the support and input of **Dean Pasutto**, COMPRIS partners with the Faculty in addressing the pharmacy practice research component of its priorities.

**Dr. Ross Tsuyuki** holds the positions of Professor and **Merck Frosst Chair** in Patient Health Management.

**Dean Franco Pasutto** is a staunch supporter of our efforts to translate research results into sustained pharmacy practice change. He was a co-author of our recently published paper "A Systematic Review of Remuneration Systems for Pharmacy Clinical Care Services" which appears in the April/May edition of the Canadian Pharmacists Journal.

Several members of COMPRIS faculty are also members of the Faculty of Pharmacy and Pharmaceutical Sciences.

COMPRIS faculty including **Dr. R. Tsuyuki, Dr. T. Bungard, Dr. J. Johnson** and **Terri Schindel** worked with the Office of Continuing Education, Faculty of Pharmacy and Pharmaceutical Sciences, to develop some of the modules in the web-based pharmacist learning program, PHARMA*Learn*. See [www.pharmalearn.com](http://www.pharmalearn.com).

A number of COMPRIS Faculty members teach at the Faculty of Pharmacy and Pharmaceutical Sciences.

## **University of Alberta, Faculty of Medicine and Dentistry**

**Dr. Ross Tsuyuki** holds the position of Professor of Medicine (Cardiology), Department of Medicine, Division of Cardiology.

**Dr. Finlay McAlister**, Associate Professor Medicine and General Internist, University of Alberta, also holds the position of **Aventis Chair** in Patient Health Management in the Faculty of Medicine and Dentistry.

## **Alberta Health and Wellness (AH&W)**

Alberta Health and Wellness (AH&W) continues to be a valued collaborating member through the COMPRIS Research Advisory Committee. We have worked closely with several staff members at AH&W in preparation of our proposal "Improving Access and Quality of Care for Patients with Diabetes by Engaging Pharmacists in Chronic Disease Management". During this process, AH&W referred us to the Institute of Health Economics for their very helpful assistance.

### **Canadian Pharmacists Association (CPhA)**

COMPRIS continues to work with the Canadian Pharmacists Association (CPhA) regarding advocating for practice and health policy change.

**Dr. Ross Tsuyuki** serves as Chair of the Editorial Board of the Canadian Pharmacists Journal.

**Ms. Terri Schindel** is a panel member for the Blueprint for Pharmacy. Elements of the Blueprint include role change and pharmacy practice models; pharmacy human resources; pharmacy education and continuing professional development; information and communications technology; financial viability and sustainability; legislation, regulation and liability; and leadership for the profession.

**Dr. Ross Tsuyuki** has been an ongoing contributor to development of the Blueprint for Pharmacy.

**Mr. Chuck Wilgosh** represented COMPRIS at the CPhA National Forum “Moving Forward, Pharmacy Human Resources for the Future”, in Toronto on March 26-27, 2008. The forum reviewed and provided extensive feedback on the draft recommendations for Pharmacy Human Resources Planning developed by the Management Committee of the task force.

The Canadian Pharmacy Practice Research Group (CPPRG) of CPhA hosted presentations of eight pharmacy practice research projects on Sunday June 1, 2008, at the CPhA Annual Meeting. Five of the eight presentors were members of COMPRIS: **Dr. Nesé Yuksel**, **Ms. Ellen Mah** (COMPRIS Student Pharmacist), **Dr. Ross Tsuyuki**, **Mr. Dean Baayens** (COMPRIS student), and **Dr. Kelly Grindrod** (COMPRIS Associate at the University of British Columbia).

### **Alberta College of Pharmacists**

**Greg Eberhart**, Registrar of the College, is a regular contributor to COMPRIS initiatives related to pharmacy practice change and scopes of practice. The College participated in a joint submission of the proposal “Improving Access and Quality of Care for Patients with Diabetes by Engaging Pharmacists in Chronic Disease Management” to AH&W.

**Mr. Eberhart** was also a co-author of our recently published paper "A Systematic Review of Remuneration Systems for Pharmacy Clinical Care Services" which appears in the April/May edition of the Canadian Pharmacists Journal.

### **Alberta Pharmacists' Association (RxA)**

Executive Director of RxA, **Mr. Keith Stewart**, and **Ms. Margaret Wing**, RxA Director of Professional Services, have consulted closely with COMPRIS and participated in a joint submission of the proposal “Improving Access and Quality of Care for Patients with Diabetes by Engaging Pharmacists in Chronic Disease Management” to AH&W.

### **Alberta Medical Association (AMA)**

AMA is represented by **Dr. William Hyndyk**, Senior Medical Advisor, on the COMPRIS Research Advisory Committee.

The AMA was an important supporter of the *SCRIP-HTN* study, serving on its advisory board.

### **College and Association of Registered Nurses of Alberta (CARNA)**

**Dr. Lynn Redfern**, Director, Policy and Practice represents CARNA on the COMPRIS Research Advisory Committee.

The CARNA was an important supporter of the *SCRIP-HTN* study, serving on its advisory board.

### **Capital Health Region**

**Ms. Marianne Stewart**, Vice President and Chief Operating Officer, Primary Care, represents Capital Health on the COMPRIS Research Advisory Committee.

COMPRIS collaborated with Capital Health, Regional Pharmacy Services on two research projects, COLLABORATE AND HEARTT. Details of these studies can be found elsewhere in this report.

The Capital Health Region was an important supporter of the *SCRIP-HTN* Study with **Dr. Ken Gardener**, Vice President Medical Services, serving on its advisory board.

### **Canadian Cochrane Symposium 2008**

**Dr. Ross Tsuyuki** and **Ms. Theresa Charrois** conducted a workshop titled “Systematic Reviews of Pharmacist Interventions: Focus on Searching, Interpreting, Evaluating and Disseminating” at the 2008 Cochrane conference in Edmonton in May.

## **COMPRIS FINANCIAL POSITION**

The 2007/08 COMPRIS Financial Report is presented in APPENDIX 2.

## EDUCATION

### Continuing Education and Training

COMPRIS continues to work with the Office of Continuing Education, Faculty of Pharmacy and Pharmaceutical Sciences. All of the educational programs developed within *PharmaLearn* have been custom designed for ease of application in practice settings to promote practice change. Ongoing maintenance of

### Fellowships/Graduate Students

**Dr. Mark Makowsky**, who completed his fellowship in 2007, coordinated the COLLABORATE project, evaluating the role of a team-based hospital pharmacist in internal medicine and family medicine, and the COLLABORATE sub-studies. Mark has been appointed to a tenure track position as Assistant Professor at the Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta.

**Dr. Sheri Koshman**, the first (in Canada) post doctoral clinical fellow in ambulatory cardiology, completed her fellowship in 2007 under co-supervisors **Dr. Ross Tsuyuki** and **Dr. Glen Pearson**. This unique position was jointly funded by the Cardiac EASE program (Division of Cardiology), Capital Health Regional Pharmacy Services, the Faculty of Pharmacy and Pharmaceutical Sciences, and COMPRIS. Sheri has been appointed to a tenure track position as Assistant Professor, Division of Cardiology, University of Alberta.

**Ms. Donna McLean**, RN, MS and PhD student in Medicine with COMPRIS, recently completed her major research project, *SCRIP-HTN*. Donna's research was funded through the Canadian Diabetes Association, the Alberta Heritage Foundation for Medical Research, the Canadian Council of Cardiovascular Nurses, the Heart and Stroke Foundation and **Merck Frosst Canada Ltd.**

Numerous pharmacy and medicine undergraduate students, pharmacy and medical residents, PharmD candidates and post-doctoral fellows attend rotations at EPICORE Centre/COMPRIS.

## SUPPORT OF RESEARCHERS

COMPRIS continues to act as a resource for practice research stakeholders to conduct, promote, apply and integrate research, education and practice. COMPRIS's research support services include consultation, protocol design, grant application, clinical trial co-ordination, data management and quality assurance, database creation, health records, biostatistics, and report writing.

## **FEATURED COMPRIS FACULTY MEMBER**

**Dr. Nesé Yuksel B.Sc.(Pharm.), Pharm.D.**



Dr. Nesé Yuksel

COMPRIS is proud to profile one of our valued faculty members, Dr. Nesé Yuksel. Nesé has successfully integrated her clinical practice, research and scholarly activities in Women's Health. In 2004, Nesé accepted a full-time position at the University of Alberta as Associate Professor with the Faculty of Pharmacy and Pharmaceutical Sciences after providing more than 12 years of expertise as a clinical coordinator with Capital Health Regional Pharmacy Services, as well as holding a cross-appointment with the faculty during this time. She maintains a practice as a clinical pharmacist and is involved in program development and teaching/mentoring with the Womens Health Ambulatory Clinics with Regional Womens Health at the Royal Alexandra Hospital (RAH) (soon-to-open Lois Hole Hospital for Women), as well as with a multidisciplinary osteoporosis clinic.

Nesé received her Bachelor of Science in Pharmacy from the University of Alberta in 1988, and then completed a one-year hospital pharmacy residency at New Westminster's Royal Columbian Hospital. In 1992, she received her PharmD from the State University of New York at Buffalo.

After receiving her PharmD, Nesé joined the RAH as a Clinical Pharmacist specializing in Therapeutic Drug Monitoring. Soon after, she moved on to be a Clinical Coordinator at the RAH, and over the years held various positions as a Clinical Coordinator with Capital Health Regional Pharmacy Services. Her passion for Womens Health started 10 years ago working with the Mature Women's Clinic and Osteoporosis Clinic at the Grey Nuns Hospital.

Notably, Nesé received the Canadian College of Clinical Pharmacists (CCCP) Merck Frosst Meritorious Service Award and the Past President Award in 2005 and 2003, respectively. She

was also the recipient of the 1998 Practitioner Award from the Canadian Society of Hospital Pharmacists (CSHP).

Nesé has recently been the focus of much media attention after she became one of fifteen pharmacists in the province to receive additional prescribing rights. What may not be known is that Nesé participated for more than 12 years in over seven committees, such as the Expert Panel on Prescribing, in order that the pharmacist's scope of practice might encompass prescribing powers. She was also an assessor for the pilot prescribing project. Nesé commented that her pharmacy practice has involved all the activities leading up to the point of prescribing. These new rights are but one more tool that enhances the role that a clinical pharmacist can play in a collaborative health care team environment.

Nesé's enthusiasm for clinical practice continues to be an inspiration to the many pharmacy students she encounters. For the past 3 years she developed, coordinated and has taught in both the Gastrointestinal Module and 'Women's and Men's Health' Module for the recently revised curriculum at the Faculty. From 1996 to 2004 she was the Regional Pharmacy Residency Coordinator for the Capital Health Regional Pharmacy Services. Her teaching also extends to other health care professionals and the public to whom she has given numerous presentations on menopause, hormonal contraceptives and osteoporosis.

Nesé has also been actively involved in numerous committees and organizations relating to Women's Health and osteoporosis. She is a team member for "Mending a Fractured Future: A Framework for the Diagnosis and Treatment of Osteoporosis," a project sponsored by Alberta Health & Wellness. Since 2005 she has been a consultant for the Scientific Advisory Council of Osteoporosis Canada. She has just been appointed to represent the Canadian Pharmacists Association (CPhA) on the Society of Obstetricians and Gynecologists of Canada (SOGC) Menopause Coalition.

Nesé's main research interests are in women's health and pharmacy practice, with a specific focus on menopause, hormonal contraception and osteoporosis. Her clinical research has included such topics as Pharmacists attitudes and perceptions on Emergency Contraception, Hormone Therapy after Surgical Menopause, Botox in chronic pelvic pain, practice patterns with testosterone therapy in women, and attitudes toward calcium and vitamin D supplementation.

Nesé's collaborative project with COMPRIS, A Randomized Trial of a Community Pharmacist Initiated Screening and Intervention Program for Osteoporosis - The OsteoPharm Study, received funding from the Institute of Health Economics (IHE) and the Faculty of Pharmacy and Pharmaceutical Sciences. This randomized controlled trial was designed to determine the effect of pharmacist-initiated multifaceted intervention on the development of osteoporosis care in patients at a high risk of fracture. Patients were screened according to the Osteoporosis Canada Clinical Practice Guidelines. Patients randomized to the intervention group received an educational session, a quantitative ultrasound measurement and a physician referral for further diagnosis or treatment from participating community pharmacists. Nesé's involvement in this research project will be described in more detail within this annual report. Although the findings of this study are awaiting publication, the design of this study can be viewed in the following publication: Yuksel, N., Majumdar, S.R., Biggs, C., Tsuyuki, R.T. "Design of a randomized trial of a community pharmacist-initiated screening and intervention program for osteoporosis" (2006) *Canadian Pharmacists Journal*, 139 (2), pp. 50-51.



Nesé's future research plans are to launch a continuing professional development (CPD) program covering women's health, menopause, hormonal contraception and other related areas. Recently, she and Terri Schindel received an unrestricted educational grant from Wyeth for the development, delivery and evaluation of a women's health program for practicing pharmacists. This new program will use short courses, independent study and clinical placements with expert practitioners to build patient care skills and prepare the pharmacist for a new era of health care delivery.

Nesé lives in Edmonton with her husband Craig, and has a 2 ½ year old daughter, Melisa, as well as 10-year old step-son, Matthew. Nesé found time to train and successfully complete the recent 50 km Blackfoot Ultra Marathon.

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## 2007/08 INITIATIVES/ACTIVITIES

### A) COMPLETED PROJECTS

#### **1. A Randomized Trial of a Community Pharmacist – Initiated Screening and Intervention Program for Osteoporosis – The OSTEOPHARM Study**

OsteoPharm (Community Pharmacist Initiated Screening Program for Osteoporosis: Randomized Controlled Trial) concluded at the end of 2007 and a paper was submitted to JAMA for publication (it has since been declined but did receive review). This study determined the effect of a community pharmacist initiated screening program on testing and treatment of osteoporosis as compared to usual care. A total of 262 patients were randomized by Save-On-Foods pharmacists throughout Alberta. The results have shown a positive impact of the pharmacist initiated screening program to test or treat patients at risk for osteoporosis. The primary outcome of BMD testing or osteoporosis treatment was achieved by twice the number of patients in the intervention group as opposed to usual care (28 vs. 14, unadjusted relative increase 2.06, 95% CI 1.14-3.74; p=0.017). In the intervention group 28 patients received BMD testing and 6 received a prescription for treatment whereas 11 received BMD testing and 3 received prescriptions in usual care (unadjusted relative risk increase 2.06, 95% CI 0.52-8.07; p=0.298 for new prescriptions and 2.22, 95% CI 1.20-4.09; p=0.011 for BMD testing). A limitation incurred with the study was the withdrawal or loss to follow up rate of almost 19%. This did not differ significantly between the two groups. OsteoPharm is currently undergoing a review and will be submitted for further publication.

OSTEOPHARM, led by **Dr. Nesé Yuksel** and Coordinated by **Ms. Cathy Biggs**, was funded by a grant from the Institute of Health Economics.

#### **2. PHIND-OA (Pharmacist Identification of New, Diagnostically Confirmed Osteoarthritis)**

PHIND-OA, by **Dr. Carlo Marra** of the University of British Columbia was completed in 2006 and was published as follows:

**Marra CA**, Cibere J, Tsuyuki RT, Soon JA, Esdaile JM, Gastonguay L, Oteng B, Embley P, Colley L, Enenajor G. Improving Osteoarthritis Detection in the Community: The Pharmacist Identification of New, Diagnostically Confirmed Osteoarthritis (PhIND-OA). *Arthritis Care & Research*. 2007 Oct;57(7):1238-44.

The objective of this study was to determine whether pharmacists could identify individuals with previously undiagnosed knee OA by using a simple screening questionnaire. Of the 411 subjects screened by the community pharmacists, 274 were deemed to be eligible study participants. Of these, 195 participated and 161 (83%) met ACR clinical criteria for knee OA which was confirmed by a rheumatologist. These data indicate that it was possible to identify individuals with undiagnosed knee OA from pharmacies. Very importantly, we observed that patients who were identified tended (58%) to have minimal changes on X-ray (K-L grade 0 to 1) and were overweight or obese (> 70%). As such, these individuals would be prime candidates for an exercise and weight loss intervention as outlined in the current evidence-based guidelines (European League Against Rheumatism 2003, American College of Rheumatology 2000, and

American Pain Society 2000). This group has potential to reduce the progression of their knee OA and improve quality of life, minimize pain and likely delay progression to joint replacement (Br J Sports Med. 2005 ;39:4-5).

The PHIND-OA study was funded by CIHR (new emerging teams grant) and Merck Frosst, and was conducted in **Save-on-Foods** Pharmacies in Vancouver and Edmonton. Congratulations to the **Save-on-Foods** pharmacists who were involved in the study for their excellent efforts.

The very positive results have prompted initiation of a new research project, PhIT-OA. Details can be found below under “New Projects”.

### **3. COLLABORATE Study**

The COLLABORATE study, was completed in 2007. The manuscripts have been submitted for publication and are currently in the peer review process. Abstracts were presented at the CSHP Professional Practice Conference in Toronto and at the CSHP Banff Conference. The investigators were **Dr. Mark Makowsky, Dr. Sheri Koshman, and Dr. Ross Tsuyuki.**

Medical inpatients are at risk of suboptimal health outcomes from adverse drug events and under-use of evidence-based therapies. Collaborative team-based care has the potential to improve patient outcomes.

The objective of this study was to determine if the integration of a clinical pharmacist into the patient care team improves the quality of prescribed drug therapy and reduces hospital readmission. A multicentre, controlled clinical trial, using an “on-off” design was conducted in four internal and family medicine teams in 3 tertiary care teaching hospitals in Edmonton, Alberta, Canada.

Consecutive patients admitted to participating teams between January 30<sup>th</sup>, 2006 and February 2<sup>nd</sup>, 2007 were included. All patients admitted during team care received proactive clinical pharmacy services (medication history, patient-care round participation, identification and resolution of drug-related issues, and discharge counselling). Usual care patients received reactive clinical services from a ward-based pharmacist.

The primary outcome, mean percentage of drug-therapy quality indicators (DTQI) achieved, was assessed retrospectively by a blinded chart reviewer for patients with a most responsible or primary diagnosis of heart failure, chronic obstructive pulmonary disease, community acquired pneumonia, type 2 diabetes, or coronary artery disease. The secondary outcome, all-cause hospital readmission, was determined prospectively via linkage with the Regional admissions database.

**Main Results:** A total of 452 patients (mean age: 74 yrs, 46% male) met eligibility criteria. Team care patients achieved a mean of 56.4% ± 30.4 DTQI, compared to 45.3% ± 28.8 in the usual care patients (adjusted p<0.001). Compared with usual care patients, team patients experienced a lower rate of readmission at 3 months [45.5% vs. 36.2%; adjusted odds ratio: 0.61 (95% confidence interval: 0.41, 0.91)] but not at 6 months.

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

This project was funded by Capital Health Regional Pharmacy Services.

The COLLABORATE Study has stimulated initiation of three sub-studies.

#### **4. COLLABORATE Sub-studies**

Three *sub-studies* around issues identified during the COLLABORATE study were completed in 2007.

##### **i. “Qualitative Investigation of Collaborative Working Relationships between Pharmacists, Physicians, and Nurse Practitioners in the Inpatient Medical Setting: A sub-study of the COLLABORATE Trial.”**

The investigators were **Dr. Mark Makowsky, Ms. Theresa Schindel, Ms. Meagen Rosenthal, Dr. Katy Campbell, Dr. Ross Tsuyuki** and **Dr. Helen Madill**. The manuscript has been submitted for publication and is currently in the peer review process. Abstracts were presented at PPC in Toronto and at the CSHP Banff Conference.

While collaborative, team-based care has the potential to improve medication use, reduce adverse drug events and cost, little attention is paid to understanding the processes of well functioning teams.

Key informant interviews and reflective journaling from pharmacists, physicians, and nurse practitioners participating in a multicentre, controlled clinical trial, of team-based pharmacist care in hospitalized medical patients was conducted. A phenomenological approach guided the data analysis and content analysis was the primary tool for unitizing, categorizing, and identifying emerging themes.

**Main Results:** Pharmacists experienced highs (developing trusting relationships and making positive contributions to patient care) and lows (struggling with documentation and workload) during integration into the medical care team. From the perspective of the participating pharmacists, nurse practitioners and physicians, the integration of pharmacists into the teams was felt to have facilitated positive patient outcomes by improving team drug-therapy decision making, continuity of care and patient safety. Additionally, the study increased all team members awareness of the potential roles that pharmacists, nurses, and physicians could play and of the benefit in working together as a team.

**Conclusions:** Focussed attention to team process, organizational and practice structure and professional development would enable successful implementation of team-based care in a larger context.

This project was funded by Capital Health Regional Pharmacy Services.

## **ii. Measuring Collaborative Working Relationships between Pharmacists and Physicians in the Inpatient Medicine Setting : A sub-study of the COLLABORATE trial.**

The investigators were **Dr. Mark Makowsky, Ms. Theresa Schindel, Dr. Katy Campbell, Dr. Ross Tsuyuki and Dr. Helen Madill**. The manuscript is ready but has not yet been submitted for publication at present. Abstracts were presented at PPC in Toronto and at the CSHP Banff Conference.

Collaborative care between physicians and pharmacists has the potential to improve processes of care and patient outcomes, yet little attention is paid to understanding physician-pharmacist collaborative working relationships.

**The objective of this study was to** determine the impact of a team-based model of clinical pharmacist practice on physician-pharmacist collaborative working relationships using the validated Physician-Pharmacist Collaboration Index (PPCI).

Attending physicians and medical residents providing service to the internal and family medicine wards were invited to complete the online PPCI once, near the completion of the main study. Physicians who worked with the study pharmacist for  $\geq 1$  week were categorized as “exposed”, while the remainder were categorized as “not-exposed.” The main endpoints were the median scores on each of the three domains of the PPCI.

**Results:** A total of 194 surveys were distributed of which 26 (13%) were returned. Only 3 (2%) of a possible 130 surveys were returned by those categorized as not exposed. Respondents in the exposed group were older and had more years in practice. Physicians in the exposed category had higher median domain scores for relationship initiation [11 interquartile range (IQR):13-15 vs. 8 (IQR 8-11);  $p=0.005$ ] and trustworthiness [40 (IQR 37-42) vs. 36 (IQR 9-36);  $p=0.03$ ] but not for role specification [29 (IQR 26-32) vs. 26 (IQR 5-30);  $p=0.024$ ].

**Conclusions:** Our results suggest that assigning a pharmacist directly to the medical team to provide patient care promoted stronger collaborative working relationships between physicians and pharmacists.

This project was funded by Capital Health Regional Pharmacy Services.

## **iii. Patient’s Perspectives on Team-Based Care by a Clinical Pharmacist: A sub-study of the COLLABORATE trial.**

The investigators were **Ms. Meagen Rosenthal, Dr. Mark Makowsky, Ms. Theresa Schindel, Dr. Katy Campbell, Dr. Ross Tsuyuki and Dr. Helen Madill**. The manuscript is ready but has not been submitted for publication at present. An abstracts was presented at the CSHP Banff Conference.

Although collaborative care has the potential to improve medication use, reduce adverse drug events, and reduce overall costs, its impact from the perspective of the patient has not been well studied.

**The objective of this study was to** better understand and document the impact of team-based delivery of clinical pharmacist services from the patient perspective.

A face-to-face interview was conducted with one patient/caregiver who previously provided positive comments about the team pharmacist.

**Results:** The patient's caregiver was particularly interested in discussing the discharge medication sheet emailed to them by the hospital pharmacist at the time of discharge. The caregiver stated: "The [community] pharmacist has this copy [and] the doctor has this copy; so they are all on the same wave length" "Because there's so many doctors that give prescriptions...they don't know what the other doctor's doing. After a couple of years, these medications build up to such an inventory. So [their community pharmacist] at [their local pharmacy], we took the sheet and went through it one-by-one, and cut back and cut back, and that's the pharmacy, the pharmacist really helped. And she's (the patient) been a lot better since."

**Conclusions:** Pharmacists are typically nameless and faceless in medical care. Placing the pharmacist on the medical team allowed for more patient interaction than is usual for most hospital pharmacists; and one more patient now knows the role that pharmacists play in their care.

This project was funded by Capital Health Regional Pharmacy Services.

## **5. Improving Blood Pressure Management in Patients with Diabetes: SCRIP-HTN**

As reported in last year's COMPRIS Annual Report, SCRIP-HTN demonstrated a **reduction of 5.6 mmHg in systolic blood pressure** in the intervention group and a **46% increase** in the proportion of patients reaching target blood pressure in the intervention group. The clinical improvements were achieved with no increase in the use of prescribed medications. The potential clinical implications of these findings are a **30% reduction in stroke, a 23% reduction in coronary events, and a 13% reduction in mortality**. Almost certainly, adding pharmacist's ability to prescribe and modify medications in patients already diagnosed with hypertension would result in an even greater impact.

An abstract was presented and published as follows:

**McLean DL, McAlister FA, Johnson JA, King KM, Jones CA, Tsuyuki RT.** A randomized trial of the effect of community pharmacist and nurse care on improving blood pressure management in patients with diabetes: SCRIP-HTN. *Can J Cardiol* 2007;23(Suppl C):116C.

The manuscript has been accepted for publication in the Archives of Internal Medicine.

## **6. Pharmacy Students Leading Pharmacy Practice Change: A Guide for Students to Negotiate for Patient-Centered Care**

This project was initiated during the summer of 2006 by COMPRIS summer student **Mr. Dean Baayens**. The purpose of the project was to prepare a tool to assist graduating pharmacy students in securing a pharmacist position that is consistent with their expectations in terms of practice environment. This preferred environment would be one that supports the pharmacist functioning at the highest level of professional practice while engaging in patient-centered pharmacy care, using their expert drug and health system knowledge to ensure that patients achieve their health

goals. The reality is that most employers do not provide the time for their pharmacists to practice patient-centred care at present.

We realized that young graduating pharmacists are ill prepared to negotiate workplace expectations with prospective employers. Yet it is these young pharmacists who may be best positioned to influence the positive evolution of pharmacy practice by demanding a practice environment conducive with patient centered care, prior to accepting a position with a prospective employer.

To address this issue, an interview tool was developed by asking leading pharmacists what requests they would make to facilitate a high level of patient-centered care if they were applying for a new job. Responses to this question were compiled until saturation was apparent. Pharmacist requests were ranked by frequency and the level of importance described by the interviewed pharmacists and used to develop a list of supports found to be critical in delivering a high level of patient-centered care. The interview tool was then designed to move the student from open-ended questions about patient-centered care to specifically asking the interviewer to address supports for patient-centered care. The interview tool also provided students with important definitions, suggested phrasing for questions and room for individualized questions.

Through collaboration with the president and past-president of the Canadian Association of Pharmacy Students and Interns (CAPSI) the interview tool was subsequently incorporated into an interview handbook. The interview handbook was jointly prepared by COMPRIS and CAPSI and contains background information on current pharmacy practice, information on preparation for an interview, the interview tool and approximately 50 additional questions focused on patient-centered care. The materials were printed and posted on the websites of CAPSI ([www.capsi.ca/compris.php](http://www.capsi.ca/compris.php)) and COMPRIS ([www.epicore.ualberta.ca/compris/PharmacyGuide.html](http://www.epicore.ualberta.ca/compris/PharmacyGuide.html)). Hard copies of the handbook were distributed to pharmacy students through CAPSI representatives at each Canadian school of pharmacy in September 2007 and at CAPSI's 2008 Professional Development Week.

Thus far feedback from students has been exceptional:

- “Overall, I believe the employers were caught off guard by the tool's questions and the shift of focus to them, their fit for me. I had confidence in the tool and in the market strength for pharmacists.”
- “It changed the interview; instead of me having to impress them, it was they who were trying to impress me. I totally felt like I was in the driver's seat and came out of that interview knowing I'd nailed it.”
- “By using the questions outlined in the tool, I negotiated with a pharmacy manager until he redefined a position that was focused on dispensing to one with a clinical focus.”

The “Pharmacy Students Leading Pharmacy Practice Change: A Guide for Students to Negotiate for Patient-Centered Care” publication has been translated into French this year and presented as an oral abstract by **Mr. Dean Baayens** at the 2008 Canadian Pharmacists Association AGM, May 30 in Victoria . In subsequent years it will be distributed to first year pharmacy students via CAPSI representatives and at Professional Development Week through CAPSI. The guide is also expected to be updated every few years with comments and suggestions collected from students through a special comments section on the CAPSI website and other sources.

Funding was provided by the Centre for Community Pharmacy Research and Interdisciplinary Strategies (COMPRIS).

## **7. Systematic Review of Remuneration Policies**

The results of a broad systematic literature review on reimbursement policies for clinical pharmacy services, conducted in 2006 by COMPRIS summer student **Mr. Phil Chan**, were recently published. The manuscript "A Systematic Review of Remuneration Systems for Pharmacy Clinical Care Services" appears in the April/May 2008 edition of the Canadian Pharmacists Journal.

**Objective:** The purpose of this project was to establish a database of references, provide descriptions of existing remuneration models for pharmacist clinical care services and to summarize the existing evaluations of economic, clinical, and humanistic outcome studies of the remuneration models. The ultimate goal is to develop a suitable pharmacist reimbursement model for practical application in the Chronic Disease Management program proposal, which was submitted to the Alberta government.

**Methods:** We searched extensive databases, the World Wide Web, hand-searched pertinent journals and reference lists, and contacted experts in pharmacy practice research. One reviewer assessed titles and, with a second independent reviewer, assessed abstracts and full-text articles for inclusion and abstracted data. We included English language articles that described or evaluated current remuneration systems for pharmacist clinical care services and that involved a substantial number of pharmacists and that were paid by a third party other than the patient. An expert panel developed recommendations for implementing a remuneration model into current pharmacy practice in Alberta.

**Results:** We identified 28 remuneration systems. Most commonly, payers were government agencies, and services were directed at the management of chronic diseases or complex medication regimens. While capitation models were evident, most systems provided payment according to intervention. Program evaluations were available from only half (14) of the described models. The few programs that evaluated clinical and economic outcomes suggested either neutral or beneficial effects. In almost all systems, initial uptake by pharmacists was high, but participation dropped after initial enrolment. Varying degrees of pharmacist uptake is similar to that found in the practice change initiatives in several COMPRIS studies.

**Recommendations:** The literature review and our panel group discussion resulted in 5 recommendations for implementing clinical care programs in the current pharmacy practice environment in Canada:

1. Develop a payment schedule that provides adequate remuneration based on a comprehensive business model to ensure its viability.
2. Develop a plan to improve uptake by addressing key barriers (e.g., training and support programs for pharmacists).
3. Evaluate the remuneration system for economic and patient outcomes after it is established.
4. Develop a communication strategy to disseminate the program and its goals to pharmacists and other health care professionals, as well as third-party payers.



5. Once a remuneration system is developed, launch a marketing campaign based on to engage stakeholders (i.e., patient groups, regional health authorities, physicians, and other health professionals) to communicate the benefits of pharmacist care and to assist in establishing demand for these services.

**Conclusion:** To ensure that the provision of clinical care services will provide a sustainable income stream for pharmacists and cost-effective quality care for patients, a viable business model with additional training and support for pharmacists and ongoing program evaluation is needed.

## **8. Systematic Review of Patients with Heart Failure**

A systematic review evaluating the effect of pharmacist care on patient outcomes in heart failure was conducted by **Dr. Sheri Koshman**. While the role of multidisciplinary teams in the treatment of patients with heart failure is well established, there is less evidence to characterize the role of individual team members.

**RESULTS:** A total of 12 randomized controlled trials (2060 patients) were identified. Extent of pharmacist involvement varied among studies, and each study intervention was categorized as pharmacist-directed care or pharmacist collaborative care using a priori definitions and feedback from primary study authors. Pharmacist care was associated with significant reductions in the rate of all-cause hospitalizations (11 studies [2026 patients]) (OR, 0.71; 95% CI, 0.54-0.94) and HF hospitalizations (11 studies [1977 patients]) (OR, 0.69; 95% CI, 0.51-0.94), and a nonsignificant reduction in mortality (12 studies [2060 patients]) (OR, 0.84; 95% CI, 0.61-1.15). Pharmacist collaborative care led to greater reductions in the rate of HF hospitalizations (OR, 0.42; 95% CI, 0.24-0.74) than pharmacist-directed care (OR, 0.89; 95% CI, 0.68-1.17).

**CONCLUSIONS:** Pharmacist care in the treatment of patients with heart failure greatly reduces the risk of all-cause and heart failure hospitalizations. Since hospitalizations associated with heart failure are a major public health problem, the incorporation of pharmacists into heart failure care teams should be strongly considered.

See (**Koshman S** et al, Arch Intern Med 2008)

## **B) ONGOING PROJECTS**

### **1. Health Policy Change**

COMPRIS continues a strategy of knowledge dissemination to influence health policy and to facilitate pharmacy practice change..

Health policy activities in 2007/08, as guided by the Research Advisory Committee, involved continued discussions with Alberta Health and Wellness regarding the request by the Deputy Minister for a proposal for engaging pharmacists in chronic disease management. The proposal was refined with assistance from the Institute of Health Economics and resubmitted to government on May 5, 2008. .

## **2. Congestive Heart Failure Outreach Program of Education (COPE)**

Funded by the Heart and Stroke Foundation of Canada, COPE will determine the impact of a simple and practical educational program for patients with heart failure (HF) on clinical outcomes, economic measures, and patient knowledge of self-care activities related to HF. Patients in hospital or the emergency department with symptomatic HF, or patients seen in an outpatient clinic with a hospitalization for HF within the previous 6 months, are identified by pharmacists or nurses for possible participation in the study. Patients are randomized to usual care versus a structured educational program consisting of a specially created video (focusing on self-care and medication adherence), accompanying booklet, and bimonthly newsletters.

Total sample size is to be 500. Enrolment from 15 centres began in October 2004 and as of year-end 2007, 1047 patients have been screened and 342 enrolled in the study.

## **3. Vascular Intervention Program (VIP)**

The Vascular Intervention Program (Principal Investigator: **Dr. Scot Simpson**) stopped recruiting new patients in December 2007 with a total of 261 subjects randomized. The study is designed to examine the impact of adding a pharmacist to the family medicine team on cardiovascular risk management in people with type 2 diabetes. **Ms. Shelley Tuchsherer** joined the study as a Research Assistant and, along with **Ms. Denise Nitschke**, is providing the pharmacist-led intervention program in this study. Two new clinics - Gateway Medical Clinic and Heritage Medical Clinic - were added as study sites this past year. Follow-up of all study subjects is planned to be completed in December 2008. VIP is funded by grants from the Canadian Diabetes Association and Institute of Health Economics. **Dr. Simpson** is supported by a CIHR New Investigator salary award based, in part, on this study.

## **4. ACHIEVA (A Cohort and Intervention Study Evaluating Antidepressant Epidemiology and Adherence)**

**Note this project has been renamed CONCORDANCE.**

ACHIEVA, started in June 2006, was designed to determine and evaluate the practice patterns of antidepressant medication prescribing by family physicians in the community and to evaluate a pharmacist-administered patient counseling tool called the Health PACT and its impact on patient adherence to antidepressant therapy.

The ACHIEVA study was suspended at the end of 2007 due to low enrollment. The pharmacists working in the study did a great job of identifying patients but the lack of patient participation made it difficult to complete either phase of the study (patients would initially consent to be involved, however would not attend appointments). The investigators felt that patients were more severely affected by their depression than first thought and that this contributed to the poor response.

The study has a new life under the name CONCORDANCE (A Randomized Controlled Trial of the Effect of a Brief Psycho-Educational Intervention on Antidepressant Persistence. This study will focus on the Phase II RCT of the original ACHIEVA study with a few differences:

- Patients will be recruited from the Psychiatric Clinic at the University of Alberta Hospital by a clinical study pharmacist;
- Patients will be screened and referred to the study pharmacist by clinic staff.

The length of the study remains at 26 weeks with the primary outcome being to compare the effectiveness of the Health PACT tool to standard care on treatment persistence. Investigators for the study are **Drs. David Gardner, Stephen Newman** and **Ross Tsuyuki**. **Ms. Lauren Brown**, former project coordinator, has moved to Calgary to complete her PhD, and **Ms. Cathy Biggs** has assumed her responsibilities. The study will be completed with the remaining funds from ACHIEVA, provided by Alberta Health and Wellness through the Institute of Health Economics. CONCORDANCE is expected to start at the beginning of August 2008.

## **5. HEARTT (Heart failure Evaluation -Acute Referral Team Trial)**

**Background:** Heart failure (HF) accounts for a substantial amount of morbidity and mortality in Canada. Patients presenting to the emergency department (ED) are at high risk for readmissions secondary to a lack of follow-up post ED visit, limited patient education and suboptimal use of evidence-based therapies. Multidisciplinary team have proven to be effective modalities in managing these patients, however specialized heart function clinics are unable to see all patients that would benefit from this care given limited resources.

**Purpose:** To assess the impact of a rapid response multidisciplinary team clinic including a clinical pharmacist, nurse, dietician and physician providing short-term sub-acute management of patients with HF recently discharged from the emergency department on the endpoints of hospitalization and mortality.

**Methods:** This study will be a multicentre, block randomized trial utilizing concealed allocation in an unblinded parallel group design comparing usual care to the intervention over a 6 month study period. Eligible patients will be those discharged from the ED with a diagnosis of HF and an ejection fraction of less than 40%. The intervention will include a multifaceted program consisting of rapid assessment (within 1 week), early short-term follow-up, medication initiation and titration and HF education in collaboration with a dietician, nurse, pharmacist and physician. The primary outcome is the difference in a composite endpoint of HF ED visits, HF hospitalizations, and mortality at 6 months.

**Status:** This study is currently on hold secondary to continuing difficulty in recruiting patients (few referrals from the emergency department). The project is currently being re-designed.

**Funding:** University of Alberta Hospital Foundation, Heart and Stroke Foundation of Canada

## **6. Perceived Benefits And Risks Of Statin Therapy In Current And Recent Users**

*Investigators:*

**Sheri L. Koshman**, BScPharm, PharmD, ACPR

**Hernando Leon**, MD, PhD

**Glen J. Pearson**, BSc, BScPhm, PharmD, FCSHP

**Albert Yeung**, BSc, MSc, MB, ChB, MD (Glasg), FRCP(C), FACP, FRCP (Glasg), FRCP (Lond)

**Ross T. Tsuyuki**, BSc(Pharm), PharmD, MSc, FCSHP, FACC

**Background:** Statins have been proven to be beneficial and relatively safe, yet have been plagued by negative perceptions and media reports of adverse effects. Little is known about patient perceptions.

**Purpose:** To determine the perceived benefits and risks of therapy among current and recent users of statins.

**Methods:** We performed a cross-sectional survey of recent and current users of statins using community pharmacy refill records. Eligible patients were identified via refill records and randomly selected to receive the survey via mail. Adherence rates to statin therapy will be collected via pharmacy records in those patients that provide informed consent.

**Status:** Preliminary data analysis has been done on 551 returned surveys. Data regarding adherence is currently being collected. Abstracts have been submitted to the Mazankowski Inaugural Conference (accepted as poster) and the Canadian Cardiovascular Congress (decision pending).

**Funding:** Unconditional grant from **Astra Zeneca**.

**Preliminary Results:** The response rate was 31.5% (n=551). The mean age was 65±11 years and 57% were male. By self report, 49% were deemed high risk or secondary prevention and 45% were classified as primary prevention. Current statin users accounted for 92% of the population identified. The majority of patients (82%) felt that the benefits of statins outweighed the risks. Information sources for the benefits of therapy most commonly cited physicians (96%) and pharmacists (18%). Only 7% of respondents correctly identified the magnitude of benefit. Most patients (61%) were unaware of the true rate of adverse effects of statins. Information sources for the adverse effects of therapy most commonly cited physicians (45%) and pharmacists (41%). Twenty-five percent of respondents reported experiencing an adverse effect, 61% being past users. Most commonly cited adverse effects included muscle-related (71%) and GI intolerance (19%). In past statin users, only 36% felt the benefits outweighed the risks. Most common reasons reported for discontinuing statins included experiencing side effects (50%), fear of side effects (34%) and preference for lifestyle changes (23%).

**Conclusions:** Patients perceive less benefit on clinical outcomes and higher rates of adverse effects from statins than the evidence suggests. The balance of benefits and risks of statins need to be better communicated to patients.

## **C) NEW PROJECTS**

### **1. Improving Hypertension Management and Reducing Costs**

This study was conducted to quantify the cost-savings that could be realized by switching patients from two separate antihypertensive agents to a single combination product. For example, a patient receiving an ACE inhibitor or an ARB plus a thiazide diuretic would be switched to a

combination product, ACE inhibitor and diuretic in the same tablet/capsule, or ARB and diuretic in the same tablet/capsule. IMS data from Oct 2006-Sept 2007 was reviewed. The conversion of ACE inhibitor/ARB and diuretic as two separate agents to a combination product resulted in a yearly cost-savings of \$1,129,739 (60% conversion) to \$1,882,908 (100% conversion), as calculated for Alberta. Extrapolated to Canada, the saving became \$26,859,173 (60% CONVERSION RATE) to \$44,765,285 (100% conversion rate).

The authors concluded that this simple intervention would not only save costs but would likely improve adherence to therapy. Changes could be initiated by a pharmacist and resultant savings could be used to fund pharmacist run chronic disease management programs for patients with high blood pressure.

The final manuscript is being reviewed for publication in the Canadian Journal of Clinical Pharmacology.

The investigators are **Vida Stankus** (University of Colorado PharmD student), **Drs. Norm Campbell, Brenda Hemmelgarn, and Guanmin Chen** (University of Calgary), **Drs. Finlay McAlister and Ross Tsuyuki** (University of Alberta).

## **2. PhIT-OA (Pharmacist-initiated Intervention Trial in Osteoarthritis)**

Due to the success of the pilot study PhIND-OA, **Dr. Carlo Marra** at the University of British Columbia, has now started PhIT-OA which is a larger prospective, comparative trial where patients will be randomized to: 1) a community-management intervention including patients, pharmacists, physiotherapists, and family physicians; or 2) “usual care”. The primary objective of PhIT-OA is to measure the effect of an education, assessment and referral intervention program initiated by community pharmacists working with patients, their family physicians, and physiotherapists to improve the quality of management in knee OA.

PhIT-OA is taking place at UBC, the Arthritis Research Centre of Canada (Vancouver), and patients are being recruited by pharmacists at various pharmacies throughout the Lower Mainland of British Columbia.

This study is funded by the Michael Smith Foundation for Health Research, the Canadian Arthritis Network and through a New Emerging Team (Net) grant from CIHR.

## **3. Improving Prevention and Management of Chronic Diseases: Systematic Reviews of Pharmacist Interventions on Patient Outcomes**

**BACKGROUND:** Numerous individual studies have demonstrated the beneficial effect of pharmacists’ care on patient outcomes in chronic disease (including identifying high-risk patients, education, medication assessment, liaison with the physician, and follow-up), yet most Canadians do not have access to these services (1-8). A large part of the reason is that health policy has not changed to acknowledge the role of pharmacists as primary healthcare providers, even though they are clearly on the front line of healthcare. What is needed is knowledge synthesis to bring to light the evidence for the role of the pharmacist in prevention, detection and

management of chronic diseases – this will allow decision makers to act upon the highest levels of evidence.

**RESEARCH PLAN:** The overall objective for this project is to evaluate the impact of adding pharmacist care on economic, clinical, and humanistic outcomes in patients with chronic disease, specifically: anticoagulation, asthma, COPD, diabetes mellitus, dyslipidemia, hypertension, heart failure, arthritis and osteoporosis. Our focus is how pharmacist interventions (across settings, therapeutic areas, and as team-members, or working individually) can impact meaningful clinical outcomes in seven commonly occurring chronic diseases.

**METHODS:** We will use well-established systematic review methodology, as described by the Cochrane Collaboration (26) and the QUOROM group (27). In addition, because the literature used encompasses practice-based research, there are other methodologic issues which have been developed or adapted by our group (in the areas of searching, quality assessment, and reporting) that are also necessary. The is coordinated by Ms. Theresa Charrois.

**PROGRESS:** We have recently published our first article in the series (**Koshman S** et al, Arch Intern Med 2008), with the results of our systematic review of interventions in heart failure.

**RESULTS:** A total of 12 randomized controlled trials (2060 patients) were identified. Extent of pharmacist involvement varied among studies, and each study intervention was categorized as pharmacist-directed care or pharmacist collaborative care using a priori definitions and feedback from primary study authors. Pharmacist care was associated with significant reductions in the rate of all-cause hospitalizations (11 studies [2026 patients]) (OR, 0.71; 95% CI, 0.54-0.94) and HF hospitalizations (11 studies [1977 patients]) (OR, 0.69; 95% CI, 0.51-0.94), and a nonsignificant reduction in mortality (12 studies [2060 patients]) (OR, 0.84; 95% CI, 0.61-1.15). Pharmacist collaborative care led to greater reductions in the rate of HF hospitalizations (OR, 0.42; 95% CI, 0.24-0.74) than pharmacist-directed care (OR, 0.89; 95% CI, 0.68-1.17).

**STATUS:** We submitted grants to the American Society of Health-System Pharmacists (unsuccessful), Greenshield Foundation (unsuccessful), and the CIHR Knowledge Translation competition (under review). This important initiative is currently unfunded and we are seeking funding.

**FUTURE:** We are currently finishing the systematic review of interventions in anticoagulation, and part way through the review of hypertension. The literature search for the dyslipidemia review is currently underway, and will be followed by the diabetes review. We have also submitted an article for publication entitled “Systematic Reviews of Pharmacy Practice Research: Methodologic Issues In Searching, Interpreting, Evaluating, and Disseminating Results” to the Annals of Pharmacotherapy.

We presented a workshop at the Canadian Cochrane Symposium in Edmonton on the above topic in March 2008.

#### **4. Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT-CDM)**

**M. Rosenthal** (EPICORE Centre/COMPRIS, University of Alberta), **KA. Grindrod** (University of British Columbia), **CA. Marra** (University of British Columbia), **LD. Lynd** (University of British Columbia), **D. Bougher** (EPICORE Centre/COMPRIS, University of Alberta), **C. Wilgosh** (EPICORE Centre/COMPRIS, University of Alberta), **RT. Tsuyuki** (EPICORE Centre/COMPRIS, University of Alberta)

**This work was supported by a grant from the *Canadian Foundation for Pharmacy***

The objective of this project was to improve knowledge of issues influencing the development of a sustainable remuneration model for pharmacists' clinical care services, including chronic disease management (CDM) in the community setting and more specifically identify the challenges and enablers, as perceived by pharmacists.

##### *Phase One*

The first phase of this study involved conducting focus groups with community pharmacists, including staff pharmacists, manager/owners and regional pharmacy managers. Potential participants were recruited with the aid of a variety of organizations from Alberta (AB) and British Columbia (BC). 36 pharmacists from both AB and BC agreed to participate. All were given an honorarium. This group of participants was broken down into eight focus groups.

Analysis of the focus groups yielded five major themes: current practice environment, education, remuneration, current practice setting, and implementation, with various sub-themes associated with each of them. For example, the theme of current practice environment yielded a number of important enablers including the benefits of establishing a good relationship with physicians and having access patient records. However, those same enablers could also become challenges for other pharmacists who were unable to establish good relationships with physicians and had not yet gained access to patient records. While these observations seem contradictory in nature they do suggest that the challenges identified by the pharmacists are not insurmountable.

Traditionally, this work would have been compacted into a single paper or poster; however this approach would result in a loss of detail and depth (primary reasons for conducting qualitative research). As such the research team decided to produce a series of papers devoted to each of the major themes, with a larger methodological paper outlining in detail the approach taken to conducting and analyzing the focus groups. In this way the richness of description utilized by the participants would not be lost.

The major themes, in addition to particular responses and examples from the focus groups were then used to create the survey questions for phase two of this study. The ultimate goal of this work is the creation of a sustainable CDM and remuneration model that will enable the advancement of pharmaceutical care for Canadians.

Presently two of these papers have been submitted for publication with four others to follow shortly. In addition to the papers three posters have also been presented on the methodology of the project, the current practice environment, and potential remuneration models at the recent Canadian Pharmacists' Association Conference.

## *Phase Two*

The second phase of this project involved the production and distribution of a survey to Alberta pharmacists. The questions which composed this survey were developed from the findings of the focus groups. Similarly to the focus groups the main objective of this work was to determine the enablers and challenges that may impact the development of sustainable CDM and remuneration models. However, there was also a secondary objective in this work which was to examine any potential differences between the experiences of pharmacists who self identified as practicing in a rural setting versus those who practiced in an urban environment. The survey can be viewed at <https://www.epicore.ualberta.ca/supportcdm/>. There were 140 fully completed surveys submitted by community pharmacists.

### Results:

Most of the respondents expressed an interest in providing CDM services to those patients with diabetes (79%), however only 49% of respondents were comfortable providing care for that disease at the time of the survey. 97% of respondents felt that any remuneration they received for the provision of clinical services should be separate from the dispensing fee. While 59% felt that payment should be shared between the pharmacist and pharmacy and only 43% supported an additional payment based upon the achievement of clinical guideline targets in patients.

The top enablers identified by participants included pharmacists' desire to change their practice (91%), a supportive work environment (88%), and patient demand for increased services (80%). Challenges included lack of time (84%), lack of remuneration (84%) and inadequate staffing (77%). When asked to provide the specific dollar value for their provision of clinical services the average dollar amount was \$44.23 (SD – \$23.90) in the form of fee for service.

With respect to potential differences between urban and rural practice settings urban pharmacists felt that demand from health care system (81 vs. 59,  $p = 0.01$ ) and prescriptive authority (69 vs. 59,  $p = 0.04$ ) were greater enablers than rural pharmacists. With respect to challenges identified, urban pharmacists felt that they had a less supportive work environment (57 vs. 35,  $p = 0.05$ ), lower patient awareness of the abilities of pharmacists (63 vs. 42,  $p = 0.02$ ), faced greater resistance to a change in pharmacy practice (42 vs. 28,  $p = 0.03$ ) and increased difficulty in finding eligible patients (29 vs. 15,  $p = 0.03$ ).

### Conclusions:

Overall this project has helped to identify particular chronic diseases pharmacists are interested in and comfortable managing, the form and amount of education support they feel is needed for the successful implementation of CDM model in their practices, the type and amount of payment they feel is required to make a CDM model sustainable, and the current enablers and challenges facing pharmacy practice in the community setting. In the future this work will help to contribute to the creation of both a sustainable CDM model and a remuneration model.

In addition to a paper that will be submitted for publication, phase two of this project has also been presented at the recent Canadian Pharmacists' Association Conference.



### *Phase Three*

Phase three of this study which is to be conducted in the coming months will involve the creation and dissemination of a Discrete Choice Experiment (DCE) survey that will be able to, using logistic regression, measure more particularly the perceptions of

## **5. AMS EDUCATION PROGRAM**

As previously reported, **Ms. Terri Schindel, Dr. Tammy Bungard and Dr. Ross Tsuyuki** received the 2006 Commonwealth of Learning (COL) Excellence in Distance Education Award for the pharmacist education and training model developed for the Anticoagulation Management Service.

A new learning program has been developed by the Office of Continuing Pharmacy Education, *Anticoagulation: On the Road to Practice Change*. This new program is a collaboration of the Faculty of Pharmacy and Pharmaceutical Sciences, Alberta College of Pharmacists, Anticoagulation Management Services in Edmonton (University of Alberta Hospital) and the Anticoagulation Management Services in Calgary (Calgary Health Region Sites), led by **Ms. Terri Schindel, Dr. Tammy Bungard, and Dr. Cynthia Brocklebank**. All phases of the original University of Alberta-based Anticoagulation Management Service program are incorporated, including PHARMA*Learn* – Anticoagulation, in the new program except that the “hands-on” learning component has been shortened to 3 days in the clinic, two days in a classroom setting and six months of mentoring. The new program was launched in April 2007. A comprehensive evaluation of the program is underway.

## **6. Recruitment of Individual Pharmacy Members for COMPRIS**

As **Dr. Ross Tsuyuki** gives his “leading change” presentation to various audiences, it appears to be very well received and many pharmacists have expressed strong support for what we were doing.

Subject to approval of an amendment to the COMPRIS membership structure, an initiative may be required to recruit and incorporate of individual pharmacy members. Further, many individual pharmacies have expressed an interest in joining COMPRIS.

We are considering expanding the membership of COMPRIS to include individual pharmacies. **Ms. Ellen Mah** conducted a series of interviews with pharmacy owners/managers during the summer of 2007. Ellen’s project is summarized below.

### **Background**

The Centre for **Community Pharmacy Research and Interdisciplinary Strategies (COMPRIS)** envisions pharmacists engaged in patient-centred care, supported by high quality research evidence of its efficacy, empowered in their work environment, continuously developing their professional skills, and recognized for their important contributions to patient care.

**Our Vision:** To be the leading internationally-recognized coordinating centre for pharmacy practice research.

**Our Mission:** To demonstrate, support, and promote the development of new and renewed roles for pharmacists within the interdisciplinary health care team.

Currently, pharmacists represent a vastly underutilized health resource. As the most knowledgeable health professional about drugs, pharmacists can and should play an expanded role in educating patients about their medications and about opportunities to improve their health and wellness. This is highlighted in the highly publicized Romanow report which recognized the need for an expanded role for pharmacist as part of the primary health care team.<sup>1</sup>

A Health Policy Framework has been set out by the Alberta government which focuses on priority areas requiring action in order to build a sustainable, flexible and robust health system. The development and implementation of major initiatives such as the electronic health record (EHR) and primary care networks are essential ingredients to achieving health system reform. In addition, pharmacists have been granted the right to prescribe under the Health Professions Act. These crucial reforms all assist in the facilitation of expanding the role of the pharmacist.

COMPRIS has successfully developed positive working relationships with key stakeholders such as the Faculty of Pharmacy and Pharmaceutical Services, the Alberta College of Pharmacists, the Alberta Pharmacists' Association, the University of Alberta, and the Capital Health Region, etc. When the strong leadership of COMPRIS and these stakeholders and the current drive for change are considered together, the opportunity for truly innovative change has never been better.

**Dr. Ross Tsuyuki** and COMPRIS have an ongoing track record of success in conducting a number of key studies involving pharmacists in the areas of chronic disease management. The study of Cardiovascular Risk Intervention by Pharmacists (SCRIP), for example, remains the largest randomized trial of pharmacist intervention in cholesterol management ever conducted.<sup>2</sup> The study was discontinued early because the benefit to patients in the pharmacist intervention group was so superior to the control group, that it would have been unethical to continue the control group. At the conclusion of the SCRIP study, we surveyed our participating investigators<sup>3</sup> and found that lack of time was cited as the most common barrier to participation. However, most felt that study-related activities did not take too much time. Interestingly, lack of support from other pharmacy staff members such as the manager or other pharmacists was a significant barrier to participation. Nevertheless, over 80% of respondents indicated that they would absolutely or most likely take part in future enhanced care programs. In addition, many individual pharmacies and pharmacists have expressed an interest in participating in COMPRIS initiatives. Hence, COMPRIS has decided to broaden its membership to promote collaboration with individual pharmacies which employ pharmacists who are motivated and have the passion to advance the profession of pharmacy. Our scope is national and this can be achieved through the proposed COMPRIS Pharmacy Partners membership.

### **Current COMPRIS Membership Categories**

- Currently, COMPRIS membership extends to Major Corporate Members (Pharmaceutical Industry), Pharmacy Organizations (pharmacy chains) and Associate Members (non-pharmacy partners). Annual membership fees are \$50,000, 25,000 and \$10,000 respectively. Major Corporate Members and Pharmacy Organizations are granted a seat on the COMPRIS Research Advisory Committee (RAC). These two categories of

membership have first opportunity to partner as the sole corporate sponsor or pharmacy participant in new COMPRIS research projects and provide input into research design of projects as they are conceived. Associate members are not granted a seat on RAC, but have access to RAC minutes, COMPRIS Annual Report and Newsletters. They have the opportunity for input into selected RAC proposals and issues. Associate members may also potentially benefit from an increase in customer base and revenue stream from relationships built through research.

### **Objectives of *Pharmacy Partners* Membership Structure**

- To engage and encourage individual pharmacy partners to participate and support professional practice research
- To make membership more accessible to stakeholders who wish to participate, based on their capacity and interest
- To ensure an adequate funding base to support the COMPRIS infrastructure, research and health policy agendas

### **Proposed *Pharmacy Partners* Membership**

- This level of COMPRIS partner contributes \$ 250 annually.
- This provides the opportunity to be first to participate in new COMPRIS initiatives.

Ellen's findings have been documented and will be analyzed and discussed within COMPRIS before a recommendation can be tabled, perhaps at the 2009 Research Advisory Committee meeting.

## **D) PROPOSED PROJECTS**

### **1. Improving Access and Quality of Care for Patients with Diabetes by Engaging Pharmacists in Chronic Disease Management**

The following is the Executive Summary of the Chronic Disease Management proposal submitted to government on May 5, 2008. A decision by AH&W had not been announced at the time of issue of this Annual Report.

## **Demonstration of Need**

The World Health Organization identifies hypertension as the most important, avoidable risk factor for death, accounting for two-thirds of strokes and half of coronary disease. Control of hypertension alone results in a 40% reduction in stroke. Based on the Canadian Heart Health Survey (4), almost half of patients with hypertension are unaware they have it, and of those being treated, only 13% reach the recommended target blood pressure levels.

This Business Case responds to the major unmet need and serious public health problem resulting from diabetes and cardiovascular disease. It focuses on patients with diabetes and uncontrolled hypertension (high blood pressure), expanding to include dyslipidemia (high cholesterol) and blood sugar control. Health promotion, disease prevention, and education are important components of the innovative, community-based model proposed.

This proposal also addresses key health system needs reflected in government's policy priorities, including putting patients at the centre, making more efficient use of health resources, and implementing innovative approaches to compensation of health professionals, that incorporate accountability and achieve value for monies expended. The current system vastly underutilizes the expertise of health professionals, notably pharmacists, promotes an episodic approach to care delivery, and fails to address the major unmet needs of patients.

## **Review of Options Considered**

Three options have been considered in this Business Case, including a continuation of the status quo, expansion of pharmacists' participation in Primary Care Networks (PCNs), and engaging pharmacists in chronic disease management. Each of these options is discussed and evaluated in the context of evaluation criteria. The attached chart (Table 1 on Page 24) provides a summary of the degree to which each criterion is impacted by each option.

Option 1, the "Status Quo", has limited application beyond the traditional distribution and medication monitoring role currently carried out by pharmacists. This role fails to capitalize on the pharmacist's extensive drug knowledge, ready accessibility, and expanded scope of practice. It reflects focus on a commodity without promoting the opportunity to improve patient health outcomes.

Option 2, "Expanding the Pharmacist's role in PCNs" is a step forward in engaging pharmacists in a more active medication review capacity, and has potential for enhancing patient care through PCNs, to the extent they are developed throughout the province. However, this option's reliance on physician referral and a problem-solving approach limits the pharmacist's ability to actively identify patients at risk and to take appropriate action, within their approved scope of practice, to improve health outcomes.

Conclusions reached from an examination of the three options described in this Business Case are that Option 3, "Engaging Pharmacists in Chronic Disease Management" best meets the criteria used for evaluation and is the strongly favored approach for improving the health outcomes for patients with diabetes who are at risk because of uncontrolled hypertension and related risk factors. This option establishes an infrastructure from which expansion to other disease applications can easily be achieved, and reflects the policy direction most aligned with government's priorities.

## **Program Scope**

The proposed delivery model includes pharmacists working collaboratively with nurses, nutritionists, and with appropriate referral to and from family physicians. It is aligned strategically with Alberta Health and Wellness' Health Policy Framework (August, 2006), and is responsive to key findings of the recent Health Council of Canada Report "Why Health Care Renewal Matters: Lessons from Diabetes" (March, 2007). This Report suggests that fewer than half of people with diabetes get the tests and procedures experts recommend, and that too many Canadians with diabetes are left vulnerable to serious but avoidable complications because they don't get the help they need to manage their conditions.

As the gatekeeper for entry of many patients into the health system, pharmacists are uniquely positioned to identify patients at risk, and to provide appropriate care or referral. Pharmacy practice research at the University of Alberta in the areas of cholesterol and hypertension management has unequivocally proven the benefits of intervention by pharmacists managing patients at risk

This program will involve appropriately trained pharmacists providing patients with diabetes with the opportunity to undergo an initial risk assessment focusing on cardiovascular risk factors, followed by education, life-style intervention, and where necessary, prescribed therapy. Pharmacists will proactively identify patients through a number of mechanisms, including their profiles of patients which identify diabetes medications, through health professional referral, and through working collaboratively with chronic disease management programs provided by health regions.

Keys to achieving successful intervention include the training requirements and selection process for participating pharmacists, integration of pharmacists in chronic disease management initiatives undertaken by health regions, and close working relationships with physicians and other health professionals. Pharmacists will practice in a variety of settings, including community pharmacies, hospital outpatient pharmacies, independent clinical practice, and in conjunction with Primary Care Networks. Key underpinnings for the program include a viable remuneration/business model and legislated authority for an expanded scope of practice. Primary Care Networks, the Electronic Health Record and Health Regions' Chronic Disease Management programs are important resource and systems linkages.

## **Program Implementation and Deliverables**

Program implementation will be phased in over 4 years, beginning with the initial establishment of 2 core clinics in Edmonton and Calgary, and the education and training of 20 pharmacists to develop core competencies. The first 12 months (Phase 1) will also include establishment of a program infrastructure, completion of developmental work on a reimbursement model which is well underway, detailed consultation with key stakeholders, and preparation of a communication plan. Subsequent phases will include expansion with the opening of more satellite clinics in rural sites, development of additional urban sites, and program evaluation. Application to other chronic disease conditions will be considered as experience is gained with the model being developed.

The proposed model will be outcomes based, with measurement and evaluation of a number of parameters, some of which will include achievement and maintenance of recommended blood pressure levels, adherence to prescribed medications, use of evidence-based medications, and achievement of blood glucose control. Practice guidelines will serve as the standard of care, and will be considered in conjunction with application of the most cost-effective approach to treatment. Evaluation will include patient satisfaction, health professional satisfaction, and impact on the health system.

This model will have a major impact on how participating pharmacists practice, and will complement and enhance care delivery by other practitioners. Patients who are identified as being at risk and whose needs cannot be addressed within the pharmacist's approved scope of practice, will be referred to their family physician, or an alternate source of care, such as primary care networks or tertiary care clinics. It is estimated that 16,000 patients will be identified for pharmacist intervention over 4 years.

Physicians will be provided with patient information collected by the pharmacist, along with appropriate medication advice, enhancing their profile of the patient and allowing better delivery of care.

### **Financial Impact**

While government is considered as the sole funder of Phase 1, it is during this phase that funding from other sources and the roles of these organizations will be defined. For example, private payers including employer groups, and the pharmaceutical industry, are viewed as important stakeholders.

Patient cost sharing within the framework of government policy will also need to be considered. It would be premature to suggest how the consumer would participate in cost sharing at this point. Suffice to say, however, that consumers need to accept responsibility for their own health, and with the exception of services that fall under the Canada Health Act, should contribute to the cost of their health care, in accordance with their financial means. This is an important principle that is a well-accepted basis for provincial drug plans, and we believe should be applied under our proposal.

The business impact on the physician is expected to be minimal because the target population includes patients whose needs are currently not being met. Physicians in fact could see a small increase in patient volumes, resulting from referral by pharmacists. Access to care for patients with diabetes will be significantly enhanced and provided more efficiently, including care in rural areas experiencing physician shortages.

The cost for Phase 1 of the program is \$887,000, increasing to \$5.6 million in year four. Eighty percent of year four costs are comprised of payments to pharmacists. It is expected that a portion of these costs will be borne by private sector insurers as the program proceeds to full implementation. The incremental amount that will be paid to pharmacists is a small fraction of the total fees now paid, and is estimated to be **less than 2%** of these fees by year four.

While the economic benefits of this program may not be obvious, they are viewed as contributing significantly to making the health system more efficient. The health system cost for

treating one stroke for example, is estimated to be \$27,500. Benefits will be captured and measured as part of the program's evaluation.

### **Conclusions, Recommendations and Next Steps**

This Business Case represents a unique opportunity to improve the health of Albertans by capitalizing on an important and underutilized resource, pharmacists, a health system undergoing unprecedented and unparalleled technological change through implementation of the Electronic Health Record, leadership in approaches to the delivery of primary care and chronic disease management, and a strong desire by health professionals to lead change. It reflects a united commitment by pharmacy leaders in Alberta to work proactively and collaboratively with other health professions, including physicians, nurses and dietitians, in the interest in providing better patient care.

This proposal requires significant further developmental work identified for the first phase, some of which is already underway through the combined efforts of COMPRIS, the University of Alberta, and the pharmacy community. These efforts include the completion of research related to the development of alternative reimbursement models for pharmacists engaged under this new approach to practice.

Although stakeholders outside of pharmacy have been briefed and are supportive of the direction reflected in this Business Case, more extensive consultation is a critical next step with key stakeholders such as private employer groups and other health professions, in particular physicians, the pharmaceutical industry, and the public. This consultation process and the activities required to establish an infrastructure for this initiative are key next steps.

It is therefore recommended that funding approval be granted for \$887,000 to support commencement of Phase 1 in early 2008/09. Approval of \$14.75 million over four years is identified as a preliminary four year budget, subject to an updated analysis of cost estimates as program development proceeds and scale of the project is determined.

It is further recommended that a governance committee be established to oversee the development of the program and to provide ongoing oversight. This committee would be co-chaired by representatives from Alberta Health and Wellness and the Centre for Community Pharmacy Research and Interdisciplinary Strategies (COMPRIS). Appointment to the committee would be based on recommendations from the respective organizations listed in the Business Case (Section 6 page 26).

Finally, it is recommended that COMPRIS be designated and funded (costs are included in the proposal) to administer the program. Responsibility for program administration and for accountability would be with the University of Alberta through the Director of COMPRIS, **Dr. Ross Tsuyuki**.

## **2. Rural and Northern Hypertension Project**

This project would initially planned as a follow-up to the SCRIP-HTN project, using rural centres, in a before-after design, enrolling patients with poorly controlled hypertension. A number of centres in rural areas of Canada have expressed strong interest in participating in this

study, including Northern Manitoba, the Territories, rural Nova Scotia, Alberta, and Prince Edward Island. After evaluating the sites potentially interested in participating in this project and considering recent legislation approving prescriptive authority for pharmacists in the Province of Alberta, it was felt that this project be split into 2 main areas.

1. A study investigating the impact of pharmacist management of hypertension (i.e., extending the design of the SCRIP-HTN study to allow pharmacist modification of drug therapy as allowed for by the new prescription legislation). This would take place in urban and rural areas in Alberta
2. A study to test the applicability of our community based pharmacist screening and intervention program (similar to that of the SCRIP-HTN study) in northern and remote locations. This would take place in remote northern and aboriginal communities in partnership with the Northwest Company.

A proposal to address the first research question is pending. Because of our recent focus on the Alberta Chronic Disease Management Proposal, the **Rural Hypertension Project** has been placed on hold.

A proposal has been developed (entitled the Northern Treatment of Hypertension - **NORTH Study**) to address the second question. We have had very positive interactions with the Northwest Company, operating out of Winnipeg Manitoba, and they have agreed to provide 6 sites for the study. We are currently working on getting approvals to conduct research in the north, and building relationships with other northern/aboriginal health researchers as well as community groups. It is anticipated that community visits, ethics approval and research licensing will be obtained in the summer of 2008 with this project starting enrollment in the fall of 2008.

These studies will be conducted with partial financial assistance from COMPRIS's "CIHR New Emerging Team Grant: Tapping An Underutilized Resource: Exploring the Role of the Community Pharmacist in Rural and Northern Health".

## GRANTS

**Dr. Ross Tsuyuki** received a grant of \$100,000 from the Canadian Foundation for Pharmacy for "Compensation for Pharmacists' Clinical Care Services – Development of a Sustainable, Scalable and Economically Viable Solution", 07/2007 to 06/2008

## MEDIA RELATIONS

Two COMPRIS studies, SCRIP and SCRIP-plus were featured in the inaugural publication of the TRANSLATOR, published by the Canadian Pharmacists Association. "The Translator is a new initiative launched to support the knowledge translation between pharmacy practice research and health policy. Each issue selects a number of pharmacy practice research articles, briefly summarizes them and discusses the health care policy implications. These articles are submitted by Canadian researchers who have a strong desire to support evidence-based health care policy



and best practices.” The first issue highlighted “four recent Canadian studies that indicate the progressive clinical roles of pharmacists for patients at high risk of cardiovascular events.”

## AWARDS/ACCOMPLISHMENTS

Congratulations to the following COMPRIS Faculty members for their significant achievements:

**Ms. Catherine Biggs** won an Alumni Horizon Award from the University of Alberta in August of 2007. The award recognizes outstanding accomplishments in the first ten years after graduation from the University.

**Dr. Tammy Bungard** was promoted from Assistant Professor of Medicine to Associate Professor with tenure, effective July 1, 2008.

**Dr. Scot Simpson** was recently promoted to from Assistant Professor to Associate Professor with tenure, Faculty of Pharmacy and Pharmaceutical Sciences

**Dr. Scot Simpson** received the BMS Award for Teaching for the Faculty of Pharmacy and Pharmaceutical Sciences.

**Ms. Lauren Brown** received a CIHR Clinical Fellowship Award.

**Dr. Ross Tsuyuki** received a Certificate of Excellence from Blood Pressure Canada in October 23, 2007. For ongoing work in his community to improve cardiovascular outcomes related to hypertension. Certificates of Excellence are awarded annually to deserving individuals, organizations or programs that have made a unique and recent contribution to the awareness, prevention, or treatment of hypertension in Canada.

## STUDENT/TRAINEE AWARDS

**Bradley Johnston** Graduate Students Association Professional Development Grant, University of Alberta (\$800), 2007

**Donna McLean** Runner Up, Student Presentation Award - Clinical Science. Canadian Cardiovascular Society. October 23, 2007. "A randomized trial of the effect of community pharmacist and nurse care on improving blood pressure management in patients with diabetes: SCRIP-HTN."

## APPOINTMENTS

**Ms. Ellen Mah** joined COMPRIS as a summer student in 2007. Ellen worked on numerous projects including investigating the feasibility of membership in COMPRIS by individual pharmacies and a Web-based review of pharmacist opinions on Chronic Disease Management and Remuneration for clinical pharmacy services. Ellen is presenting her project “Study of

Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT- CDM): Results of an Alberta-wide Survey of Community Pharmacists“ at the CPhA Conference in Victoria BC, May 31 to June 3, 2008. Ellen graduated with distinction from the University of Alberta, Faculty of Pharmacy and Pharmaceutical Sciences, in May 2008.

**Ms. Meagen Rosenthal** joined COMPRIS in the summer of 2007. Meagen is a Master of Sociology student. Her project, now named “*Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT- CDM)*”, was to conduct focus groups of Alberta Pharmacists to determine their attitudes toward Chronic Disease Management and remuneration models for clinical pharmacist services.

Respectfully Submitted by:

Ross T. Tsuyuki, BSc(Pharm), PharmD, MSc, FCSHP, FACC  
Professor of Medicine and Director,  
EPICORE Centre/COMPRIS  
Professor and Merck Frosst Chair in Patient Health Management  
Faculty of Pharmacy and Pharmaceutical Sciences  
University of Alberta

## PRESENTATIONS

Six presentations by COMPRIS staff were featured at the Canadian Pharmacists Association Conference – 3 oral presentations and 3 poster presentations:

“*Pharmacy Students Leading Pharmacy Practice Change*”, oral presentation at the CPhA Annual National Conference, Victoria B.C, May 31-June 3, 2008, by **Dean Baayens**, Student Pharmacist, University of Alberta.

“*Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT- CDM): Results of an Alberta-wide Survey of Community Pharmacists*”, oral presentation at the CPhA Annual National Conference, in Victoria B.C., May 31-June 3, 2008, by **Ellen Mah**, Student Pharmacist, University of Alberta.

“*A Randomized Trial of Community Pharmacist and Nurse Care on Improving Blood Pressure Management in Patients with Diabetes: SCRIP-HTN*”, oral presentation at the CPhA Annual National Conference, in Victoria, May 31-June 3, 2008, by **Ross Tsuyuki**.

“*Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT- CDM): Qualitative Methods (Part 1 of 3)*”, a poster presentation at the CPhA National Annual Conference, in Victoria, B.C., May 31-June 3, 2008, by Masters candidate (Sociology), **Meagen Resenthal**.

“*Study of Understanding Pharmacists Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT- CDM): Challenges and Enablers, Part 2 of 3*,” a poster presentation at the CPhA National Annual Conference, in Victoria, May 31-June 3, 2008, by **Kelly Grindrod** BSc(Pharm), ACPR, PharmD, Post-doctoral Fellow, Michael Smith Foundation for Health Research, MSc Student, Collaboration for Outcomes Research and Evaluation, Faculty of Pharmaceutical Sciences, University of British Columbia.

“*Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT- CDM): Remuneration (Part 3 of 3)*”, a poster presentation at the CPhA National Annual Conference, in Victoria, B.C., May 31-June 3, 2008, by Masters candidate (Sociology), **Meagen Resenthal**.

**Ross Tsuyuki PharmD MSc, Theresa Charrois** conducted a workshop “Systematic Reviews of Pharmacist Interventions: Focus on Searching, Interpreting, Evaluating and Disseminating” at The Canadian Cochrane Symposium 2008: New Horizons For Systematic Reviews In Health Care, In Edmonton.

**Ross Tsuyuki's** other presentations included:

1. “The Role of the Pharmacist in Cardiovascular Risk Reduction”. Irish Pharmaceutical Union 5<sup>th</sup> Annual Healthcare Seminar, Dublin, January 29, 2007.
2. “Living well with heart failure – Patient Education Strategies”. Capital Health Education Session, Edmonton, February 15, 2007.

3. "Leading Change in Pharmacy Practice: Where we are & where we need to go". The 12<sup>th</sup> Annual Manitoba Pharmacy Conference, Winnipeg, MB, April 14, 2007.
4. "Meet the CPJ Editors". Session chair for Working Breakfast, CPhA Annual National Conference, Centennial Celebration, Ottawa, ON, June 2-5, 2007.
5. "Pharmacy Practice Studies: The need for evidence-based pharmacy practice". Presented at the 7th Annual Cardiovascular Therapy Fall Symposium, Canadian Cardiovascular Pharmacists Network, Edmonton, AB, September 15-16, 2007.
6. "Evidence-Based Pharmacy Practice: How it will shape our future". Winnipeg Regional Health Authority Regional Pharmacy Service Visiting Professor Series, Winnipeg, MB, October 2, 2007.
7. "Why Prescribing Will Save Our Profession". Teachers of Pharmacy Administration Conference, Montreal, QC, October 12, 2007
8. "Leading Change in Pharmacy Practice". Canadian Society of Hospital Pharmacists – Saskatchewan Branch Annual General Meeting & Education Sessions, Saskatoon, SK, October 26-27, 2007.
9. "The Role of Hospital Pharmacists in Heart Failure Care". Canadian Society of Hospital Pharmacists – Saskatchewan Branch Annual General Meeting & Education Sessions, Saskatoon, SK, October 26-27, 2007.
10. "Achieving Success with Heart Failure: A role for the pharmacist". Shoppers Drug Mart/Pharmaprix Annual Pharmacist Meetings, Toronto - September 29-30, Calgary - November 3, Halifax - November 17-18, 2007.
11. "The Changing role of the Pharmacist in Capital Health and the Community". Southwest Community Health Council, November 27, 2007.
12. "The Role of ARBs in the Treatment of MI and HF". Internal Medicine Update, Jasper, December 2, 2007.

Four presentations by COMPRIS staff occurred at the tripartite Conference (Alberta College of Pharmacists, Alberta Medical Association, College and Association of Registered Nurses of Alberta) Strengthening the Bond: Collaborating for Optimal Patient Care, Banff, Alberta, May 3-6, 2007:

1. **Sheri Koshman** conducted a poster presentation, "HEART FAILURE EVALUATION - ACUTE REFERRAL TEAM TRIAL (HEARTT): DESIGN AND BASELINE CHARACTERISTICS", for the tripartite Conference (Alberta College of Pharmacists, Alberta Medical Association, College and Association of Registered Nurses of Alberta) Strengthening the Bond: Collaborating for Optimal Patient Care, Banff, Alberta, May 3-6, 2007

2. **Mark Makowsky** conducted a poster presentation, “Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment: The COLLABORATE Study”, for the tripartite Conference (Alberta College of Pharmacists, Alberta Medical Association, College and Association of Registered Nurses of Alberta) Strengthening the Bond: Collaborating for Optimal Patient Care, Banff, Alberta, May 3-6, 2007
3. **Ross Tsuyuki** and **Chuck Wilgosh** conducted a poster presentation, “Promoting the Evolution of Interprofessional Practice: The Centre for COMmunity Pharmacy Research and Interdisciplinary Strategies (c/COMPRIS)”, for the tripartite Conference (Alberta College of Pharmacists, Alberta Medical Association, College and Association of Registered Nurses of Alberta) Strengthening the Bond: Collaborating for Optimal Patient Care, Banff, Alberta, May 3-6, 2007
4. **Donna McLean** conducted a poster presentation, “SCRIP-HTN”, for the tripartite Conference (Alberta College of Pharmacists, Alberta Medical Association, College and Association of Registered Nurses of Alberta) Strengthening the Bond: Collaborating for Optimal Patient Care, Banff, Alberta, May 3-6, 2007

## PUBLICATIONS

### Publications, Peer Reviewed:

1. Majumdar SR, Tsuyuki RT, McAlister FA. Impact of opinion leader-endorsed evidence summaries on quality of prescribing for patients with cardiovascular disease: A randomized controlled trial. *Am Heart J* 2007;153:22.e1-22.e8.
2. Semchuk W, Taylor J, Sulz L, Deschamps M, Tsuyuki RT, Duffy P, Wilson T. Pharmacist Intervention in Risk Reduction study: High-risk cardiac patients. *Can Pharm J* 2007;140(1):32-7.
3. Taylor J, Semchuk W, Deschamps M, Sulz L, Tsuyuki RT, Duffy P, Wilson T. Pharmacist Intervention in Risk Reduction study in high-risk cardiac patients: The effect of 2 methods of pharmacist training. *Can Pharm J* 2007;140(2):116-123.
4. Tandon P, Bain VG, Tsuyuki RT, Klarenbach S. Systematic review: renal and other clinically relevant outcomes in hepatorenal syndrome trials. *Aliment Pharmacol Ther* 2007;25:1017-1028.
5. McAlister FA, Oreopoulos A, Norris CM, Graham MM, Tsuyuki RT, Knudtson M, Ghali WA for the APPROACH Investigators. Exploring the treatment-risk paradox in coronary disease. *Arch Intern Med* 2007;167:1019-1025.
6. Newman SC, Gardner DM, Brown LC, Tsuyuki RT. Improving the Use of Antidepressants in the Community: The Design of A Cohort and Intervention Study Evaluating Antidepressant Epidemiology and Adherence (ACHIEVA). *Can Pharm J* 2007;140(3):175-179 .
7. Ray JG, Norris CM, Udell JA, Tsuyuki RT, McAlister FA, Ghali WA. Lipid-lowering therapy and outcomes in heart failure. *J Cardiovasc Pharmacol* 2007;12:27-35
8. Eurich DT, McAlister FA, Blackburn DF, Majumdar SR, Tsuyuki RT, Varney J, Johnson JA. Benefits and harms of antidiabetic agents in patients with diabetes and heart failure: systematic review. *BMJ* 2007;doi:136/bmj.39314.620174.80.
9. Tsuyuki RT, Campbell N for the Canadian Hypertension Education Program. 2007 CHEP-CPhA guidelines for the management of hypertension by pharmacists. *Can Pharm J* 2007;140(4):238-9.

10. Guirguis LM, Schindel T, Johnson JA, Tsuyuki RT. Evaluating pharmacists' experience using diabetes practice tools: A pilot study. *Can Pharm J* 2007; 140:312-9.
11. Koshman SL, McAlister FA, Ezekowitz JA, Shibata M, Rowe B, Choy J, Tsuyuki RT. Design of a randomized trial of a multidisciplinary team heart failure rapid referral program: Heart failure Evaluation – Acute Referral Team Trial (HEARTT). *Can Pharm J* 2007;140:306-11.
12. Marra CM, Cibere J, Tsuyuki RT, Soon JA, Esdaile JM, Gastonguay L, Oteng B, Embley P, Colley L. Improving the identification of osteoarthritis in the community: The Pharmacist Identification of New, Diagnostically Confirmed Osteoarthritis (PhIND-OA) Study. *Arthritis Care Res* 2007;57(7):1238-1244, DOI 10.1002/art.23019.
13. Lum EY, Sharpe HM, Nilsson C, Andrews EM, Tsuyuki RT, Mayers I, Cowie RL. Urban & Rural Differences in the Management of Asthma Amongst Primary Care Physicians. *Can J Clin Pharmacol* 2007;14(3):e-275-e282.
14. Makowsky MJ, McAlister FA, Galbraith PD, Tsuyuki RT for the APPROACH Investigators. Lower Extremity Peripheral Arterial Disease in Individuals with Coronary Artery Disease: Prognostic Importance, Care Gaps, and Impact of Therapy. *Am Heart J* 2008;155:348-55.
15. Tsuyuki RT, Arnold JMO for the CCS Heart Failure Consensus Conference Primary Panel. The Canadian Cardiovascular Society Consensus Conference Recommendations on Heart Failure Update 2007: A Summary for Pharmacists. *Can Pharm J* 2008;141(2):98-101.
16. Majumdar SR, Johnson JA, Lier DA, Russell AS, Hanley DA, Blitz S, Steiner IP, Maksymowych WP, Morrish DW, Holroyd BR, Rowe BH. Persistence, reproducibility, and cost-effectiveness of an intervention to improve quality of osteoporosis care after a fracture of the wrist: results of a controlled trial. *Osteoporos Int*. 2007 Mar;18(3):261-70. DOI:10.1007/s00198-006-0248-1.
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18. McAlister FA, Majumdar SR, Eurich DT, Johnson JA. The impact of specialist care within the first year on subsequent outcomes in 24,232 adults with new onset diabetes mellitus: population-based cohort study. *Qual & Saf Health Care* 2007;16:6-11.
19. Koleba T, Pohar SL, Johnson JA. Addition of prescription drug data to the Canadian National Diabetes Surveillance System case definition. *Can J Diabetes* 2007;31:47-53.
20. Jeerakathil T, Johnson JA, Simpson SH, Majumdar SR. Short-term risk for stroke is doubled in persons with newly-treated type 2 diabetes compared to persons without diabetes: a population-based cohort study. *Stroke* 2007;38:1739-1743.
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26. Guirguis LM, Schindel TJ, Johnson JA. Evaluating pharmacists' experience using diabetes practice tools: A pilot study. *CPJ/RPC* 2007;140(5):312-319.
27. McAlister FA, van Diepen S, Padwal R, Johnson JA, Majumdar SR. How evidence based are the recommendations in evidence-based guidelines? *PLoS Medicine* 2007;7;4(8):e250.
28. Pohar SL, Majumdar SR, Johnson JA. Healthcare costs and mortality for Canadian urban and rural patients with diabetes: Population-based trends from 1993 – 2001. *Clinical Therapeutics* 2007;29:1316-1324.
29. Padwal RS, Majumdar SR. Drug treatments for obesity: orlistat, sibutramine, and rimonabant. *Lancet* 2007;369:71-77.
30. Simon SR, Rodriguez HP, Majumdar SR, Kleinman KP, Warner C, Salem-Schatz S, Miroshnik I, Soumerai SB, Prosser LA. Economic analysis of a randomized trial of academic detailing interventions to improve use of antihypertensive medications. *J Clin Hypertens* 2007; 9:15-20.
31. Simpson SH. Primary care ... the "new" frontier. (editorial) *Can J Hosp Pharm* 2007;60:85-6.
32. Simpson SH. Should pharmacists perform physical assessments? – The "Pro" Side. *Can J Hosp Pharm* 2007;60:271-2.
33. Koshman SL, McAlister FA, Ezekowitz JA, et al. Design of a randomized trial of a multidisciplinary team heart failure rapid referral program: Heart failure Evaluation – Acute Referral Team Trial (HEARTT): [NCT00355511]. *Can Pharm J* 2007; 140:306-11.
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37. Bungard TJ, Klakowicz A, Ritchie B. Pre-procedural Oral Vitamin K<sub>1</sub>: Lessons Learned with Two Experiences in a Single Case. *CJHP* 2007;60(5):319-323.
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40. Semchuk B, Taylor J, Sulz L et al. Pharmacist intervention in risk reduction study: High-risk cardiac patients. *Can Pharm J* 2007; 140 (1): 32-7.
41. Taylor J, Semchuk B, Sulz L et al. Pharmacist Intervention in Risk Reduction study in high-risk cardiac patients: The effect of 2 methods of pharmacist training. *Can Pharm J* 2007; 140 (2): 116-123.
42. Taylor JG, Lo Y-N, Dobson R, Suveges L. Consumer expectations of nonprescription medications according to location of sale. *J Amer Pharm Assoc* 2007; 47: 729-736.
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45. Nair KM, Dolovich L, Brazil K, Raina P. It's all about relationships: A qualitative study of health researchers' perspectives of conducting interdisciplinary health research. *BMC Health Services Research* 2008, 8: 110 doi:10.1186/1472-6963-8-110.

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48. Lau E, Papaioannou A, Dolovich L, Adachi J, Sawka AM, Burns S, Nair K, Pathak A. Patients' adherence to osteoporosis therapy: Exploring the perceptions of postmenopausal women. *Canadian Family Physician* 2008; 54: 394-402.
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65. Koshman SL, Pearson GJ. Practice Spotlight: Sheri Koshman and Glen Pearson; Clinical Pharmacotherapy Practitioners. *Can J Hosp Pharm* 2008;61:55.
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68. Makowsky MJ, McAlister FA, Galbraith PD, Tsuyuki RT for the APPROACH Investigators. Lower Extremity Peripheral Arterial Disease in Individuals with Coronary Artery Disease: Prognostic Importance, Care Gaps, and Impact of Therapy. *Am Heart J* 2008;155:348-55.
69. Tsuyuki RT, Arnold JMO for the CCS Heart Failure Consensus Conference Primary Panel. The Canadian Cardiovascular Society Consensus Conference Recommendations on Heart Failure Update 2007: A Summary for Pharmacists. *Can Pharm J* 2008;141(2):98-101.
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71. Koshman SL, Charrois TL, Simpson SH, McAlister FA, Tsuyuki RT. Pharmacist care of patients with heart failure: A systematic review of randomized trials. *Arch Intern Med* 2008;168:687-694.
72. Campbell N, Tsuyuki RT, Jarvis B. It's time to reduce sodium additives in food. *Can Pharm J* 2008;141:8-9.
73. Marra CA, Tsuyuki RT, Soon JA, Gastonguay L, Oteng B, Cebere J, McAuley C, Esdaile JM, McGregor M, Khan K. Design of a randomized trial of multidisciplinary intervention for knee osteoarthritis: Pharmacist Initiated Trial in Osteoarthritis (PhIT-OA). *Can Pharm J* 2008;141:33-38.

#### **Book Chapters:**

1. Makowsky MJ, Tsuyuki RT. Chapter 13: Pharmaceutical Care and Safe and Effective Medication Use. In: MacKinnon NJ. Safe and Effective. The Essential Elements of an Optimal Medication-Use System. Ottawa: Canadian Pharmacists Association 2007:305-318.

#### **Abstracts:**

1. Green CJ, Simpson SH, Nitschke DE, Johnson JA. Explicating pharmacists' diabetes care on a primary care team. Presented: Accelerating Primary Care, Edmonton AB, April 2007. Published: Conference Abstracts (Abstract 17)
2. Green CJ, Simpson SH, Nitschke DE, Johnson JA. Getting pharmacy knowledge into diabetes primary care practice: an institutional ethnography. Presented: Strengthening the Bond: Collaborating for Optimal Patient Care. ACP / AMA / RxA / CARNA / CPSA Joint Conference, Banff, AB, May 2007. Published: Conference Abstracts (Abstract 23)
3. Houlihan S, Cave A, Flook N, Hurlburt M, Lord C, Smith L, Sternberg H, Simpson SH. Hypertension treatment and control rates in a family medicine clinic. Presented: Strengthening the Bond: Collaborating for Optimal Patient Care. ACP / AMA / RxA / CARNA / CPSA Joint Conference, Banff, AB, May 2007. Published: Conference Abstracts (Abstract 24)
4. Green CJ, Simpson S, Nitschke D, Johnson J. Translating pharmacy knowledge into enhanced glycemic and hypertension control in diabetic primary care: an institutional ethnography of practice changes in Alberta. Presented: 4<sup>th</sup> Canadian Therapeutics Congress, Halifax, NS, May 2007. Published: *Can J Clin Pharmacol* 2007;14(2):e165 (Abstract 121).

5. Koshman SL, McAlister F, Ezekowitz J, Rowe B, Choy J, Tsuyuki R. Heart Failure Evaluation – Acute Referral Team Trial (HEARTT): Design and Baseline Characteristics. Presented: Strengthening the Bond Conference, May 3-5, 2007, Banff, AB.
6. Makowsky M, Tsuyuki R. Capturing Outcomes of Clinical Activities Performed by a Rounding Pharmacist Practicing in a Team Environment (COLLABORATE). Presented: Strengthening the Bond Conference, May 3-5, 2007, Banff, AB.
7. McLean D, McAlister F, Johnson J, King K, Jones Ch, Tsuyuki R. Improving Blood Pressure Management in Patients with Diabetes: The SCRIP-HTN Study. Presented: Strengthening the Bond Conference, May 3-5, 2007, Banff, AB.
8. Tsuyuki R, Wilgosh C. Promoting the Evolution of Inter-Professional Practice: The Centre for Community Pharmacy Research and Interdisciplinary Strategies (COMPRIS). Presented: Strengthening the Bond Conference, May 3-5, 2007, Banff, AB.
9. Eurich DT, Majumdar SR, McAlister FA, Tsuyuki RT, Yasui Y, Johnson JA. Does incorporating health-related quality of life into composite outcome analyses improve transparency? Presented: (Podium Presentation) Canadian Association for Population Therapeutics (CAPT) Annual Meeting, May 22-24, 2007, Halifax, NS.  
Published: *Can J Clin Pharmacol* 2007;14(Suppl)2:e109.  
Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.  
Presented: (Podium Presentation) 23<sup>rd</sup> International Conference on Pharmaco-epidemiology & Therapeutic Risk Management (IPSE), August 19-22, 2007, Quebec City, QC. (Best Methods Abstract by a Student)  
Published: *Pharmacoepidemiol Drug Saf* 2007;16(Suppl 2)S30.
10. Lehr EJ, Chari A, Norris CM, Tsuyuki RT, Turnbull RG, MacArthur RG. Quality of life in long-term survivors of acute aortic dissection. Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.
11. Rajabali NA, Tsuyuki RT, Sookram S, Simpson SH, Welsh RC. Evaluation of the attitudes and perceptions of paramedics, cardiologists, emergency nurses and emergency physicians regarding pre-hospital diagnosis, triage and treatment of STEMI patients using a region wide survey. Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.
12. Tsuyuki RT, Lockwood EE, Gutierrez R, Olson KL, Reddy M, Shibata MC, Adewale AJ. Patient knowledge of heart failure self care and its relationship to outcomes.  
Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.  
Presented: Canadian Cardiovascular Congress, Quebec City, QC, October 20-24, 2007.  
Published: *Can J Cardiol* 2007;23(Suppl C):68C-69C.
13. McLean DL, McAlister FA, Johnson JA, King KM, Jones CA, Tsuyuki RT. A randomized trial of the effect of community pharmacist and nurse care on improving blood pressure management in patients with diabetes: SCRIP-HTN.  
Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.  
Accepted (Withdrawn): *American Heart Association*, Orlando, FL, November 4-7, 2007.  
Presented: Canadian Cardiovascular Congress, Quebec City, QC, October 20-24, 2007. (Runner Up, Student Presentation Award – Clinical Science)  
Published: *Can J Cardiol* 2007;23(Suppl C):116C.
14. Eurich DT, McAlister FA, Blackburn DF, Majumdar SR, Tsuyuki RT, Varney J, Johnson JA. How should patients with diabetes and heart failure have their blood sugars controlled? A systematic review and meta-analysis of available literature.  
Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.  
Accepted: 43<sup>rd</sup> Annual Meeting of the European Association for the Study of Diabetes (EASD), September 17-21, 2007, Amsterdam, The Netherlands (*forthcoming*).  
Accepted: CDA/CSEM Canadian Diabetes Association Professional Conference & Annual Meeting, October 24-27, 2007, Vancouver, BC (*podium presentation forthcoming*).
15. Rajabali NA, Tsuyuki RT, Sookram S, Simpson SH, Welsh RC. Focus group methodology to evaluate the attitudes and perceptions of paramedics, cardiologists, emergency nurses and physicians regarding pre-

- hospital diagnosis, triage and treatment of STEMI patients. Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.
16. León H, Shibata MC, Sivakumaran S, Dorgan M, Chatterley P, Tsuyuki RT. The effect of fish oils on mortality and arrhythmias: A systematic review. Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.
  17. Pretorius V, Liang Y, Tsuyuki R, Gelfand ET, Ross DB. Surgical Decision Making in Patients with Ischemic Mitral Regurgitation Undergoing Coronary Artery Bypass Grafting: More Opinion than Evidence? A Systematic Review. Presented: 11<sup>th</sup> Annual Cardiac Sciences Research Day, June 8, 2007, Edmonton, AB.
  18. King KM Parry M, Southern D, Faris P, Tsuyuki RT. Women's Recover From Sternotomy-Extension (WREST-E) Study: Examining Long-Term Pain and Discomfort Following Sternotomy and Their Predictors (abstract). Presented: Canadian Cardiovascular Congress, Quebec City, QC, October 20-24, 2007. Published: *Can J Cardiol* 2007;23(Suppl C):209C.
  19. Sivakumaran S, Tsuyuki RT, Repka L, Krahn A, Jones A, Skanes A, Kubac G, Gula L, Paradon K, Yee R, Klein G. Manual Chest Compression Facilitates Low Energy Cardioversion of Atrial Fibrillation (abstract). Presented: Canadian Cardiovascular Congress, Quebec City, QC, October 20-24, 2007. Published: *Can J Cardiol* 2007;23(Suppl C):277C.
  20. León H, Shibata MC, Sivakumaran S, Dorgan M, Chatterley P, Tsuyuki RT. The effect of fish oils on mortality and sudden cardiac death: A systematic review. Presented: Canadian Cardiovascular Congress, Quebec City, QC, October 20-24, 2007. Published: *Can J Cardiol* 2007;23(Suppl C):288C.
  21. Yuksel N, Wilkie J, Bayne P, Small K, Hagen S, Shandro T, Schuurmans NA. Collaborative Approach to Managing the Health Concerns of Perimenopausal and Menopausal Women. Presented: 2007 Strengthening the Bond: Collaborating for Optimal Patient Care Conference. Banff, AB May 2007
  22. Xu J, Yuksel N. Evaluation of Testosterone Therapy in Menopausal Women: A Chart Review. 2007 Presented: Faculty of Pharmacy and Pharmaceutical Sciences Research Day, Edmonton November 2007.
  23. Yuksel N. Integration of Clinical Practice, Research and Scholarly Activity in Women's Health and Pharmacy Practice. Presented: Faculty of Pharmacy and Pharmaceutical Sciences Research Day, Edmonton, November 2007.
  24. Featherstone T, Stempfle R, Leung H, Law E, Simpson SH. Characterizing the use of acetylsalicylic acid within a long term nursing home facility. Presented: Western Branches, Canadian Society of Hospital Pharmacists 34<sup>th</sup> Annual Banff Seminar, Banff, AB. March 2008.
  25. Makowsky MJ, Koshman SL, Tsuyuki RT. Capturing outcomes of clinical activities performed by a rounding pharmacist practicing in a team environment: The COLLABORATE trial. *Can J Hosp Pharm* 2008;61(Suppl 1):51.
  26. Makowsky MJ, Schindel TJ, Rosenthal M, Campbell K, Tsuyuki RT, Madill HM. Qualitative investigation of collaborative working relationships between pharmacists, physicians and nurse practitioners in the inpatient medical setting: A sub-study of the COLLABORATE trial. *Can J Hosp Pharm* 2008;61(Suppl 1):51.
  27. Makowsky MJ, Madill HM, Schindel TJ, Campbell K, Tsuyuki RT. Measuring collaborative working relationships between pharmacists and physicians in the inpatient medicine setting: A sub-study of the COLLABORATE trial. *Can J Hosp Pharm* 2008;61(Suppl 1):51-52.
  28. Yuksel N, Majumdar SR, Biggs C, Tsuyuki RT. A Randomized Trial of a Community Pharmacist Initiated Screening and Intervention Program for Osteoporosis – The OsteoPharm Study. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.
  29. Baayens D, Berg M, Famuyide O, Tsuyuki RT. Pharmacy Students Leading Pharmacy Practice Change. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.
  30. Tsuyuki RT, McLean DL, McAlister FA, Jones CA, King KM, Johnson JA. A Randomized Trial of Community Pharmacist and Nurse Care on Improving Blood Pressure Management in Patients with Diabetes: SCRIP-HTN. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.

31. Mah E, Rosenthal M, Tsuyuki RT. Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT-CDM): Results of an Alberta-wide Survey on Community Pharmacists. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.
32. Rosenthal M, Grindrod KA, Marra CA, Lynd LD, Bougher D, Wilgosh C, Tsuyuki RT. Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT-CDM): Remuneration. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.
33. Grindrod KA, Rosenthal M, Marra CA, Lynd LD, Bougher D, Wilgosh C, Tsuyuki RT. Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT-CDM): Methods to Determine What Pharmacists Really Think About CDM. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.
34. Grindrod KA, Rosenthal M, Marra CA, Lynd LD, Bougher D, Wilgosh C, Tsuyuki RT. Study of Understanding Pharmacists' Perspectives on Remuneration and Transition towards Chronic Disease Management (SUPPORT-CDM): Challenges and Enablers. Accepted: CPhA Annual National Conference, Victoria, BC, May 31 – June 3, 2008.



## APPENDIX 1

Centre for COMMunity  
Pharmacy Research &  
Interdisciplinary  
Strategies (c/COMPRIS)

### RESEARCH ADVISORY COMMITTEE (RAC) TERMS OF REFERENCE

#### I. PURPOSE

- To serve in an advisory capacity to COMPRIS.
- To collaborate with COMPRIS and stakeholders in developing strategies to assist with the achievement of goals and objectives.

#### II. RESPONSIBILITIES

The RAC shall:

- Provide input and advice on formulation of the COMPRIS Mission Statement and Goals and Objectives
- Provide high level guidance on policy and the strategic plan development
- Identify research opportunities for consideration by COMPRIS
- Make recommendations on prioritizing research initiatives
- Facilitate communication between COMPRIS sponsors, researchers and stakeholders
- Assist in the development of action plans for common initiatives
- Provide a forum for discussion and identification of areas of common interest for COMPRIS's sponsors and collaborators
- Promote and publicize pharmacy practice research and the incorporation of research results into health policy

### III. MEMBERSHIP

Dr. Franco Pasutto	Dean	Faculty of Pharmacy and Pharmaceutical Sciences 3118 Dentistry/Pharmacy Centre University of Alberta Edmonton, AB T6G 2N8
Dr. Tom Marrie	Dean	Faculty of Medicine and Dentistry 2J2.02 WMC University of Alberta Edmonton, AB T6G 2R7
Mr. Jeff Poston	Executive Director	Canadian Pharmacists Association 1785, prom. Alta Vista Dr. Ottawa, ON K1G 3Y6
Mr. Greg Eberhart	Registrar	Alberta College of Pharmacists 1200, 10303 Jasper Avenue Edmonton, AB T5J 3N6
Mr. Keith Stewart	Chief Executive Officer	Alberta Pharmacists' Association 1800 – 10303 Jasper Avenue NW Edmonton, AB T5J 3N6
Mr. Murray McKay	Project Leader Quality Improvement , Health Accountability Division Research and Evidence Branch	Alberta Health and Wellness 22nd Floor , TELUS Plaza North Tower 10025 Jasper Ave Edmonton, AB T5J 1S6
Mr. Steve Long	Executive Director Pharmaceuticals and Life Sciences Branch	Strategic Directions Division Alberta Health and Wellness 18th Floor, TELUS Plaza North Tower 10025 Jasper Avenue Edmonton, Alberta T5J 1S6
Dr. William Hyndyk	Senior Medical Advisor	Alberta Medical Association 12230 – 106 Avenue Edmonton, AB T5N 3Z1
Ms. Marianne Stewart	Vice President and Chief Operating Officer, Primary Care	Capital Health 10216 - 124 Street Edmonton, AB T5J 1S6
Dr. Lynn Redfern	Director, Policy and Practice	College and Association of Registered Nurses of Alberta 1620 – 168 Street Edmonton, AB T5M 4A6
Mr. Kirk Lange	Pharmacy Initiatives Marketing Manager, West	AstraZeneca Canada Inc.
Ms. Christine Chin		Bristol-Myers Squibb/Sanofi-Aventis
Ms. Lori-Jean Manness	Manager of Patient Health	Merck Frosst Canada Ltd. 55 Fairgrove Bay Winnipeg, MB R2R 1C9
Mr. Ralph Lai	Director, Pharmacies	Overwaitea Food Group 19855 - 92A Avenue Langley, BC V1M 3B6
Mr. Jamie Davis	Director, Government Affairs & Patient Access	Bayer HealthCare Pharmaceuticals 14720 – 86 Ave Edmonton, AB T5E 4B8
Mr. Peter Mantha	President	ManthMed Inc. Unit 6 - 6695 Millcreek Drive Mississauga, ON L5N 5R8
Ms. Karen Sullivan	Manager, Professional Services	Apotex Inc. 16 Scenic Ridge Green NW Calgary, AB T3L 1V7
Dr. Ross Tsuyuki	Director, COMPRIS	EPICORE Centre University of Alberta 220 College Plaza Edmonton, AB T6G 2C8
Mr. Chuck Wilgosh	Business Manager, COMPRIS	EPICORE Centre University of Alberta 220 College Plaza Edmonton, AB T6G 2C8
Mr. David Bougher	Consultant – Health Policy	EPICORE Centre University of Alberta 220 College Plaza Edmonton, AB T6G 2C8

The membership may be amended from time to time, by the addition of new corporate sponsors and key institutional stakeholders.

#### **IV. MEETINGS**

The Committee will meet annually and at the call of the chair.

Revised June 4, 2008



## APPENDIX 2

### COMPRIS FINANCIAL POSITION

#### BUDGET VERSUS ACTUAL REVENUES AND EXPENDITURES For Period July 1, 2006 to Dec 30, 2007

	2007 ORIGINAL Budget	2007 REVISED Budget	2007 ACTUAL	Variance (Actual vs Revised)	2008 Projected
	July06-June07	July06-Dec07	July06-Dec07		Jan08-Dec08
<b>REVENUES</b>					
Balance Previous Year	\$13,572	\$13,572	\$158,155	\$144,583	\$162,953
Revenues	\$150,000	\$225,000	\$284,417	\$59,417	\$100,000
<b>TOTAL REVENUES</b>	<b>\$163,572</b>	<b>\$238,572</b>	<b>\$442,572</b>	<b>\$204,000</b>	<b>\$262,953</b>
<b>EXPENSES</b>					
Salaries	\$48,000	\$72,000	\$66,235	-\$5,765	\$68,000
Fellowships/Students	\$35,000	\$52,500	\$74,021	\$21,521	\$40,000
Supplies/Office	\$13,000	\$19,500	\$8,049	-\$11,451	\$10,000
EPICORE Infrastructure	\$41,000	\$61,500	\$82,800	\$21,300	\$20,500
Meetings/Travel	\$14,000	\$21,000	\$43,514	\$22,514	\$28,000
Honorarium	\$10,000	\$15,000	\$5,000	-\$10,000	\$10,000
<b>TOTAL EXPENSES</b>	<b>\$161,000</b>	<b>\$241,500</b>	<b>\$279,619</b>	<b>\$38,119</b>	<b>\$176,500</b>
<b>SURPLUS (DEFICIT)</b>	<b>\$2,572</b>	<b>-\$2,928</b>	<b>\$162,953</b>	<b>\$165,881</b>	<b>\$86,453</b>

#### EXPLANATORY NOTES

This report covers an 18 month period. Past reports and the original 2006-07 budget were for a 12 month period.

Cash Balance Variance and Revenues Variance relate to change in accounting practice per UofA. We now recognize revenues when received vs allocating them annually to the year in which they apply, as done previously.

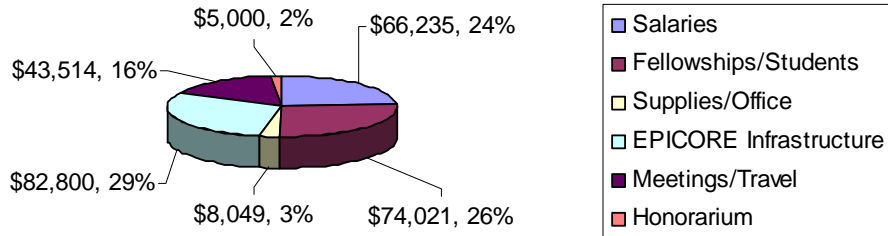
EXCEPTION: Actual Infrastructure charges are for a TWO YEAR PERIOD to June-08. Therefore 2008 projection is for half the year.  
Meeting/Travel costs include hosting, travel & accommodation costs of visiting faculty

#### GENERAL NOTES

1. Annual EPICORE Infrastructure cost is \$41,400 and offsets use of space, equipment, secretarial support, access to EPICORE Centre skills and expertise of staff supporting COMPRIS Studies.
2. Actual salary costs include conducting unfunded systematic reviews and preparing CDM proposal to AH&W.
3. Projected 2008 revenues reduction is based on currently uncommitted membership fees.



**ACTUAL EXPENSES (18 MONTHS)  
JULY- 06 TO DEC- 07  
TOTAL = \$279,619**



**PROJECTED 2008 BUDGET (12 MONTHS) TOTAL  
\$176,500**

