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I am pleased to introduce the Centre for Health Evaluation and Outcome Sciences’ (CHÉOS) Annual Report for 2011/12. The Centre has seen much success this past year, and we are delighted that in January of 2012, CHÉOS received approval and became a University of British Columbia (UBC) Faculty of Medicine Research Centre. As part of this significant achievement, we look forward to working with a newly established External Advisory Committee for the Centre consisting of academic, industry and government partners. With our scientists representing six departments within UBC, including the School of Population and Public Health and numerous divisions within the Faculty of Medicine, in addition to the Faculty of Pharmaceutical Sciences and the School of Nursing in the Faculty of Applied Sciences, we anticipate even greater collaboration and coordination with one of Canada’s leading universities.

Four new scientists joined CHÉOS in 2011/12: Dr. Nick Bansback from UBC’s School of Population and Public Health, Dr. Richard Sawatzky from the School of Nursing at Trinity Western University, and Drs. Martha Mackay and Peggy Simpson, both clinical nurse specialists with Providence Health Care and faculty members in UBC’s School of Nursing. We also added over thirty trainees and twenty research staff members, demonstrating the Centre’s continued commitment to providing a rich training environment for new talent.

Several of our major research initiatives received renewal funding from the Canadian Institutes of Health Research (CIHR) in 2011/12. These include the Health and Housing in Transition study led by Dr. Anita Palepu in Vancouver and the Cedar Project led by Drs. Patricia Spittal and Martin Schechter. We were also happy to see a CIHR New Emerging Team Grant for Rare Diseases awarded to Dr. Larry Lynd and his colleagues.

This Annual Report highlights the accomplishments of CHÉOS scientists, staff and students, and recognizes their efforts to undertake, support and achieve personal and professional excellence. Our scientists were appointed to new leadership positions, given opportunities to lead new impactful initiatives and our research endeavors garnered local and international attention in the media. The Centre also hosted numerous well-attended workshops and seminars promoting collaboration, best practices in research as well as knowledge sharing across health disciplines.

I would like to take this opportunity to thank the Providence Health Care Research Institute for their support of our Centre, as well as all of my CHÉOS colleagues for their outstanding efforts contributing to not only our Centre’s success, but to advancing health outcomes research. We look forward to continuing our efforts to support and conduct collaborative research that informs improved patient care, and I hope you enjoy reviewing our achievements contained in this report.

Aslam Anis, PhD, FCAHS
Director, Centre for Health Evaluation and Outcome Sciences
CHÉOS is an interdisciplinary research collective founded to pursue excellence in research through the rigorous evaluation, interpretation and dissemination of health outcomes information. As clinicians and epidemiologists, CHÉOS researchers are embedded in the health care system to ensure our research is relevant and driven by clinical need. In addition to conducting our own research, the centre’s other primary function is to offer methodological expertise to researchers, including assistance with study design, statistics, health economics, data management and grant facilitation for both health outcomes research and clinical trials.

CHÉOS was established in 1997, and is based at St. Paul's Hospital in Vancouver, British Columbia. CHÉOS is a centre of the Providence Health Care Research Institute (PHCRI), and in 2012, was also officially established as a University of British Columbia (UBC) Faculty of Medicine Research Centre. Our unique position as a health outcomes unit situated in a teaching and research hospital is ideal for supporting clinical epidemiology. Additionally, we are committed to creating an inclusive, dynamic and cooperative work environment in which younger researchers are mentored, established researchers are supported, and all participants are encouraged to pursue personal and professional challenges.

CHÉOS investigators are known for ground breaking research to improve care for our most vulnerable and marginalized urban populations. Our research includes the study of urban populations with mental health issues, addictions and infectious diseases. It involves the health of marginalized groups including Canada’s First Nations and ethnic minorities. Our research also includes the study of people who are critically or chronically ill and the elderly. All of these populations require complex care that challenges the fabric of our health care system, and improved care for these populations is urgently needed.

As a testament to the quality of research performed by CHÉOS scientists, two are Canada Research Chairs (Drs. Carlo Marra and Martin Schechter) and nine have been named Michael Smith Foundation for Health Research (MSFHR) Scholars (former member Dr. Adrian Levy, and currently Drs. Karin Humphries, Anita Palepu, John Gill, Carlo Marra, Larry Lynd, Chris Richardson, Nadia Khan and Eugenia Oviedo-Joekes). Since 2005, CHÉOS scientists have also collectively published over 1,400 peer-reviewed manuscripts.

CHÉOS is structured to encompass both existing and new areas of research interest. Related objectives are threefold: to generate more interest and excitement in multi-disciplinary research; to respond to emerging issues in the population health arena; and to provide a mechanism that can facilitate cross-discipline dialogue and multi-disciplinary grant opportunities. CHÉOS and the health partners we work with believe that our research is needed to form a continuous loop of improvement where clinical practice informs research, and research informs clinical practice. Ultimately, we seek to influence change and improve health and health systems by empowering decision makers to make positive change based on evidence.
New Scientist Appointments

Dr. Nick Bansback, PhD

• Assistant Professor, School of Population and Public Health, UBC

Dr. Bansback joined CHÉOS as a Research Scientist in January of this year. He is an Assistant Professor at the School of Population and Public Health at the University of British Columbia. His research broadly seeks to use decision science to improve policies and practices in health. Interests include decision-analysis techniques such as cost-effectiveness modeling and value of information analysis, preference elicitation such as discrete choice experiments and the analytic hierarchy process, and network meta-analysis. Applications of Dr. Bansback’s research involves the development of innovative decision tools for integration into clinical decision making.

Dr. Bansback has a BSc in Mathematics majoring in Operations Research, an MSc in Health Services Research, and in 2010 he completed his PhD in Health Economics and Decision Sciences at the University of Sheffield, UK.

Dr. Richard Sawatzky, PhD, RN

• Associate Professor, School of Nursing, Trinity Western University
• Visiting Associate Professor, UBC

Dr. Sawatzky joined CHÉOS as a scientist in December 2011, bringing methodological expertise, and a programme of research that is an excellent fit with our mandate. His research focuses on methods of patient-reported outcomes and quality of life measurement, and the intersections of spirituality, religiosity, culture, and other sources of diversity in various health care contexts, including those for people with life limiting conditions, and their family caregivers, who are in need of a palliative approach.

He has a particular interest in examining the implications of population heterogeneity with respect to individuals’ self-reports about their health status and quality of life. His current research includes studies on a palliative approach in nursing, the use of computerized assessment systems, methods for the measurement of quality of life in longitudinal studies, spiritual and religious diversity in healthcare, educational approaches for patients with colorectal cancer, and patients’ experiences with knee surgery. His clinical background is in palliative care and medical nursing care, and he has been part of the School of Nursing faculty at TWU since 2002. He also teaches courses in the Master of Science Nursing programme on knowledge synthesis and quantitative research methods.
New Scientist Appointments

Dr. Martha Mackay, PhD, RN, CCN(C)

- Clinical Nurse Specialist, Cardiology Heart Centre, St. Paul's Hospital
- Clinical Assistant Professor, School of Nursing, UBC
- Cardiovascular Outcomes Research Fellow, Cardiac Services BC

We are pleased to announce that Dr. Martha Mackay also joined CHEOS this past year. She is a clinician-scientist dividing her time between the roles of Clinical Nurse Specialist (CNS) in Cardiology at the St. Paul’s Hospital Heart Centre, and Clinical Assistant Professor at the UBC School of Nursing. She has been practicing for more than 30 years in critical care and cardiac nursing, and has also spent many years as a critical care nursing educator, with 15 years as a CNS. She completed her initial nursing education at George Brown College in Toronto, and has since earned her BSN, MSN and PhD degrees at UBC.

Dr. Mackay has been the recipient of a CIHR Clinical Research Fellowship, the Cardiac Services BC Fellowship in Cardiovascular Outcomes, and more recently, a Heart and Stroke Foundation of Canada Research Scholarship. Her research focuses on sex, gender and ethnic differences in symptoms; treatment-seeking behaviour and outcomes following acute coronary syndrome and cardiac procedures; and finally, the evaluation of interventions to improve patients’ cardiac risk behaviours.

Dr. Peggy Simpson, PhD, RN

- Clinical Nurse Specialist, Consultation Liaison Psychiatry, Providence Health Care
- Adjunct Professor, School of Nursing, UBC

We are happy to announce that Dr. Peggy Simpson has also joined CHEOS as a scientist this past year. She is currently a clinical nurse specialist in the Mental Health Program and the Department of Psychiatry at St. Paul’s Hospital and adjunct professor at UBC’s School of Nursing. Her role, as such, is focused primarily on clinical research evidence-based practice and knowledge translation. Formerly she held an academic appointment at The University of Hong Kong Faculty of Medicine in the Department of Nursing Studies (assistant professor).

Dr. Simpson received her undergraduate (BN) and graduate education (MN) from the University of Calgary and her doctoral degree from the University of Hong Kong. She has received grants from the Government of Alberta and the Research Grants Council of Hong Kong. Dr. Simpson is also a consultant to the Ministry of Health, Provincial Mental Health and Substance Use Sector Survey Group.

Dr. Simpson’s primary research focus is on the prevention, identification, and management of delirium in an acute care setting. Dr. Simpson developed the Family Nursing Practice Scale, which has been used worldwide in numerous family nursing research initiatives. She is currently partnering in a CIHR international research collaboration to advance the practice of family nursing in health care services.
CHÉOS Scientists

Since its inception, CHÉOS has aimed to bring together a multidisciplinary collective of health care researchers and professionals whose primary focus is health outcomes research. This research pool includes renowned, well-funded experts in their fields who draw from a significant base of individual and collaborative research experience on the local, national and international levels.

**CHÉOS scientists for 2011–2012:**

Aslam Anis, PhD, FCAHS
Najib Ayas, MD, FRCPC
Nick Bansback, PhD
Monica Beaulieu, MD, FRCPC, MHA
Carl J. Brown, MD, MSc, FRCSC
Geoffrey Cundiff, MD, FACOG, FACS
Peter Dodek, MD, MHSc
Josie Geller, PhD, R. Psych
Jagbir Gill, BSc, MPH, MD, FRCPC
John Gill, MD
Sabrina Gill, MD, MPH, FRCPC
Eric Graßstein, MD
Devin Harris, MD, CCFP (EM), MHSc, PhD
Natalie Henrich, PhD, MPH
Karin Humphries, MSc, MBA, DSc
Garth Hunte, MD, PhD
Nadia Khan, MD
Lorne Korman, PhD, R. Psych
Jean-François Kozak, PhD
Michael Krausz, MD, PhD, FRCPC
Adeera Levin, MD, FRCPC
Larry D. Lynd, BSP, PhD
Martha Mackay, PhD, RN CCN(C)
Carlo A. Marra, PharmD, PhD, BSc, FCSHP
Eugenia Oviedo-Joekes, PhD
Anita Palepu, MD, MPH, FRCPC
Adam Peets, MD, MSc
P. Terry Phang, MD
Stephen Pinney, MD
Manoj Pinney, MD
Chris G. Richardson, PhD, MSc, BA
Richard Sawatzky, PhD, RN
Martin Schecter, OBC, MD, PhD, FRCPC, FRSC, FCAHS
Christian G. Schütz, MD, PhD, MPH
Kamran Shojania, MD, FRCPC
Peggy Simpson, PhD, RN
Joel Singer, PhD
Patricia Spittal, PhD
Rob Stenstrom, MD, PhD, CCFP-EMT
Verena Strehlau, MD, PhD, RPN
Iris Torchall, PhD
Barbara Trerise, MHSc
Brian Westerberg, MD, MHSc, BA, FRCSC
Hubert Wong, PhD, BASc
Awards and Accomplishments

Dr. Aslam Anis became a Fellow of the Canadian Academy of Health Sciences. He was also awarded a 2012 Award for Excellence in Mentoring Early Career Faculty from the UBC Faculty of Medicine.

In January 2012, Dr. Nick Bansback became an assistant professor at UBC’s School of Population and Public Health.

Dr. Carl Brown received two awards for his accomplishments in 2011: the Best Resident Teacher Award for UBC’s Department of Surgery, and the award for top clinical paper at the Canadian Surgical Forum for his presentation, “Retrospective comparison of early complications rate in open vs. suture closure rectal lesions excised using Transanal Endoscopic Microsurgery.” He also received a research grant from the Canadian Society of Colorectal Surgeons entitled, “A multi-centre randomized controlled trial of sutured vs. unsutured management of surgical defects in patients undergoing Transanal Endoscopic Microsurgery.”

Dr. Geoffrey Cundiff received the 2011 Foundress Mission Team Award from St. Paul’s Hospital Maternity Services Program. He was also appointed regional head, Obstetrics and Gynecology for Providence Health Care (PHC) and Vancouver Coastal Health (VCH).

Dr. Anne Gadermann was awarded a Michael Smith Foundation for Health Research (MSFHR) 2011 Research Trainee Award for her work titled, “Investigating the relationship between residential stability, physical and mental health, and quality of life in homeless and vulnerably housed individuals: A multi-site longitudinal study.”

Dr. John Gill was elected president of the Canadian Society of Nephrology. He was also granted tenure at UBC’s Faculty of Medicine as an associate professor.
Dr. Eric Grafstein was appointed to a combined role as regional head of the Department of Emergency Medicine and regional medical director of Emergency Medicine for PHC and VCH. He also received the 2011 Providence Health Care Research Institute (PHCRI) Research and Mission Award.

PhD Student Stephanie Harvard has been granted a CIHR Doctoral Award for Patient-Oriented Research—Health Economics. She also received a Frederick Banting and Charles Best Award Graduate Scholarship.

Dr. Karin Humphries now holds the UBC Heart and Stroke Foundation Professorship in Women’s Cardiovascular Health.

Dr. Nadia Khan received a MSFHR Career Investigator Award in 2011 for her research on improving chronic cardiovascular disease management in ethnicultural patients. She also became an associate faculty member at UBC’s School of Population and Public Health.

Dr. Eugenia Oviedo-Joekes received a MSFHR 2011 Career Investigator Award for her work on the Study to Assess Long-Term Opioid Medication Effectiveness (SALOME).

Dr. Adeera Levin, executive director of the BC Provincial Renal Agency, received St. Paul’s Hospital’s Howard B. Stein Master Teacher Award for 2011, an award given to a physician deemed by his or her residents to be the most outstanding teacher.

Dr. Larry Lynd was named a scholar for the Peter Wall Institute for Advanced Studies in August 2011. He was also appointed to the Health Canada Scientific Advisory Committee on Nonprescription Drugs.

Dr. Carlo Marra’s Tier II Canada Research Chair in Pharmaceutical Outcomes was renewed in 2011. He became a member of the CIHR Operating Grant Evaluation Committee for Health Services Research and the CIHR Drug Safety and Effectiveness Network Committee, as well as a full professor in the Faculty of Pharmaceutical Sciences at UBC.
Awards and Accomplishments continued

The UBC Faculty of Medicine awarded Dr. Anita Palepu the Distinguished Achievement Award for Service to the University and Community.

PhD Candidate Stephen Pan received a U.S. Fulbright student grant (China).

Health Economist Adam Raymakers was one of six students to receive the Office of the Dean, Research & Graduate Studies Travel Award from the UBC Faculty of Pharmaceutical Sciences.

CIHR awarded Dr. Chris Richardson with a 2011 CIHR New Investigator Award for his BC Adolescent Substance Use Survey (BASUS).

The UBC Faculty of Medicine honoured Dr. Martin Schechter for his distinguished service as the Head of the Department of Health Care and Epidemiology from 2000–2008 and the Director of UBC’s School of Population and Public Health from 2008–2010.

Dr. Kamran Shojania was promoted to clinical professor status from clinical associate professor in July 2012 in UBC’s Division of Rheumatology.

Dr. Iris Torchalla and her colleagues Drs. Michael Krausz, Verena Strehlau and Kathy Li, received the Zeldowicz Clinical Science Poster Award for a poster on their study about mental health and suicidality in homeless women. The poster was presented at UBC Department of Psychiatry’s 26th Annual Research Day in Fall 2011.

The UBC Department of Surgery (Otology & Neurotology) promoted Dr. Brian Westerberg to clinical professor in July 2011. Dr. Westerberg received the P.J. Doyle Teaching Award from the Division of Otolaryngology in UBC’s Department of Surgery in June 2011.

Dr. Adeera Levin, along with fellow CHÉOS scientists Drs. Patricia Spittal, John Gill, Jagbir Gill, and Chris Richardson, received a two-year operating grant from CIHR for their study of “transplant tourism,” the practice of travelling to another country to purchase an organ for transplantation purposes. Through this research, a better understanding will be gained in terms of what types of patients are more likely to consider transplant tourism, whether these patients understand the potential risks associated with this practice, whether they understand the options for transplantation locally and what has prevented them from pursuing these options locally. The research will also aim to better understand strategies that could help increase the ability of patients to get transplanted locally and to deter them from opting for transplant tourism.

Dr. Nick Bansback, along with Drs. Carlo Marra and Larry Lynd, has received funding from The Arthritis Society for his study that will use iPads to try and improve decision-making in patients needing osteoarthritis medication. Patients who visit pharmacies will be asked to use an app Dr. Bansback has developed for the iPad to help them become better informed about treatment for their condition. He will test whether the app helps patients make more informed decisions when it comes to their own health care.

In fall 2011, Dr. Carl Brown received a research grant from the Canadian Society of Colorectal Surgeons. Dr. Brown and his CHÉOS colleagues Drs. Manoj Raval and Terry Phang were featured in Promise, St. Paul’s Hospital Foundation’s magazine, for their development of a centre for excellence in colorectal surgery at St. Paul’s Hospital.
In March of 2012, the study entitled, “Cost-effectiveness of diacetylmorphine versus methadone for chronic opioid dependence refractory to treatment,” received widespread media attention as it found that medically prescribed heroin is more cost-effective than methadone for treating long-term street heroin users. Led by Dr. Aslam Anis, Centre director, this study received attention from multiple news outlets, including CBC News, The Toronto Star, The Daily Beast, Time and The Daily Mail.

This study was published in the Canadian Medical Association Journal (CMAJ) and attributed most of the economic benefits to the fact that recipients of medically prescribed heroin (diacetylmorphine) stayed in treatment longer and spent less time in relapse than those receiving methadone. Both results are associated with reduced criminal activity and lower health care costs.

Additionally, an individual in the diacetylmorphine group was more likely to live longer than someone receiving methadone maintenance therapy. The findings were drawn from the North American Opiate Medication Initiative (NAOMI), a trial of medically prescribed heroin that took place in Vancouver and Montreal from 2005 to 2008, as well as administrative drug data from British Columbia.

Those in the methadone therapy group generated an average lifetime societal cost of $1.14 million per person, while those in the diacetylmorphine group generated a lesser cost of $1.09 million. The study considered treatment expenditures, estimated costs for drug therapies and costs borne by the justice system.

The study is a collaboration between CHÉOS, UBC, Université de Montréal and the Northern Ontario School of Medicine. Co-authors on the publication include Bohdan Nosyk, Daphne P. Guh, Nicholas J. Bansback, Eugenia Oviedo-Joekes, Suzanne Brissette, David C. Marsh, Evan Meikleham and Martin T. Schechter (continued over).
Research Highlights continued

The NAOMI study was also led by researchers from PHC, CHÉOS and UBC, and was a randomized trial aimed at testing whether medically prescribed heroin was more effective than methadone therapy for individuals who were not currently benefiting from conventional treatment.

NAOMI was North America’s first-ever clinical trial of prescribed heroin, and enrolled 251 patients. The results of NAOMI, published in the New England Journal of Medicine, showed that patients treated with the prescribed heroin were more likely to stay in treatment or quit heroin altogether and more likely to reduce their use of illegal drugs and other illegal activities than patients treated with oral methadone. An online implementation tool is available at http://www.cheos.ubc.ca/. This tool allows for the calculation of costs and savings for any jurisdiction by inputting relevant demographic data.

Researchers to explore the impact of price-caps in the pharmaceutical industry

Dr. Aslam Anis, with scientists Drs. Marra and Lynd, received a two-year operating grant in January 2012 from CIHR for their research project, “The impact of price-caps on the generic pharmaceutical industry and provincial drug plan costs in Canada.” In September 2011, Dr. Anis’ previous research on the subject gained media attention in The National Post.

The Pharmacoeconomics Program is a multidisciplinary team consisting of physicians, biostatisticians, economists, pharmacists, and epidemiologists. Centre Director Dr. Aslam Anis heads the program, which undertakes projects in a variety of areas of study, including health technology assessment, economic burden of illness and health services research, and pharmaceutical pricing and regulation.

Dr. Krausz appointed lead in youth mental health initiative

This past year, UBC and Bell announced a $1M gift to establish the Bell Youth Mental Health IMPACT Project which will be led by Dr. Michael Krausz. The project will include: research into how BC’s young adults are currently using online mental health resources and what is lacking; testing of a web-based psychotherapy program that includes an online self-assessment tool along with self-guided exercises and techniques; creation of a similar online program for anxiety; and testing the effectiveness of various online communication channels, not only between experts and patients but also between experts and primary care providers (continued over).
Research Highlights continued

“Despite the high prevalence of anxiety and depression, especially among those in late adolescence and early adulthood, the proportion of people who actually receive treatment in time is quite low,” Dr. Krausz said in an interview with UBC. “Too often, their first opportunity to access care results from an encounter with police or a trip to the emergency room. Enabling young adults to get help early will reduce the chances that their condition will lead to substance abuse or attempts at suicide.”

At first, the project will focus on underserved communities and involve partnerships with primary care physicians, school counselors, police and family organizations to facilitate use of the platform by those who need it. Insights from these pilot studies will be used to develop a province-wide mental health web portal.

CHÉOS researchers on homelessness

In May 2012, Dr. Krausz shared findings of the BC Health of the Homeless Survey Report with the City of Vancouver. This report was based on a survey conducted by Dr. Krausz and co-investigator Dr. Christian Schutz. 500 homeless individuals in three BC cities were surveyed, providing comprehensive data on key health indicators and risk factors among this diverse group. “Our study shows that the majority of homeless people experience some kind of trauma during childhood. Given that, it is really important to start discussing earlier interventions to cope with mental health challenges,” Dr. Krausz said.

Recognition for SALOME trial researcher

Dr. Eugenia Oviedo-Joekes received a MSFHR 2011 Career Investigator Award for her work on the Study to Assess Long-Term Opioid Medication Effectiveness (SALOME).

SALOME is a clinical trial that will test whether hydromorphone (Dilaudid®), a licensed medication, is as good as diacetylmorphine, the active ingredient of heroin, at benefiting people suffering from chronic opioid addiction who are not benefiting sufficiently from other treatments (continued over).
Research Highlights continued

This study will also test if those effectively treated with these two injectable medications can be successfully switched and retained to the oral formulations of the medications.

The SALOME study follows up on an unexpected finding of the NAOMI study, which was that injection patients could not accurately discriminate whether they were receiving diacetylmorphine or hydromorphone. Investigators also observed similar results and benefits with both these drugs, although the small number of participants receiving hydromorphone did not permit us to draw any definite and scientifically valid conclusions as to the efficacy of hydromorphone as a treatment option.

Should hydromorphone be proven to be as good as diacetylmorphine, the benefits of this form of injectable treatment may be more feasible and achievable without the emotional and regulatory barriers often presented by heroin maintenance. Therefore, the NAOMI investigators designed SALOME to test this hypothesis as a next step of the NAOMI study.

Dr. Richardson recognized for his research on adolescents and substance use

Dr. Chris Richardson received a 2011 CIHR New Investigator award for his work on the British Columbia Adolescent Substance Use Survey (BASUS). BASUS is a multi-year research study of BC teenagers’ attitudes about, and experiences with, tobacco, alcohol, marijuana, and other drugs. The survey also asks about a range of other topics, including extracurricular activities, self-esteem, resilience, depression, family life, and physical health and development.

The goal of BASUS is to investigate patterns in the progression of substance use, using an internet-based web survey, in approximately 5,000 adolescents as they progress through the first three years of secondary school. The information gained from this study will improve our understanding of the determinants of individual differences in the development of alcohol, tobacco, and marijuana use. The findings will be shared with health promotion experts and school district supervisors to inform local drug education and health promotion activities.

At Home/Chez Soi in the media

Preliminary results of the At Home/Chez Soi study broke ground in the national media. The five-year project is exploring the best combination of housing and supports for homeless individuals with mental illness. Being undertaken in five Canadian cities, the study has housed over 1,000 participants, with another 980 receiving community support. Investigators, including Drs. Verena Strehlau, Krausz and Schutz, are striving to assist policy makers in understanding what initiatives and supports are needed to solve chronic homelessness in Canada.

The study employs a Housing First approach, which provides individuals with housing and support services that are customized to meet their needs. The research portion of the study will end in 2013.
The Cedar Project receives renewal grant

The **Cedar Project** was awarded two new grants from CIHR: a planning grant and a three-year operating grant.

Aboriginal investigators and collaborators, forming the Cedar Project Partnership, have governed the research and knowledge translation process from the beginning of the Cedar Project. Together with this partnership, Principal Investigators **Drs. Patricia Spittal and Martin Schechter** aim to introduce a surveillance initiative for sexually transmitted infections, explore what helps and hinders youth from entering into addiction treatment, and examine whether using mobile phone technology can help prevent hepatitis C and HIV and improve health outcomes.

The Cedar Project looks at HIV and hepatitis C vulnerabilities among Aboriginal young people who use injection or non-injection drugs. The community-based research initiative has sites in Vancouver, Prince George and Chase, BC, and is the first indigenous “at risk” young people’s cohort in North America.

A new lease for the Health and Housing in Transition Study

The **Health and Housing in Transition Study (HHiT)**, a longitudinal study looking at the health and housing status of homeless and vulnerably housed single adults in Vancouver, Ottawa and Toronto, received renewal funding from CIHR this year.

**Dr. Anita Palepu**, the lead investigator for the Vancouver site, and her fellow researchers are exploring whether changes in housing status are associated with changes in mental and physical health, alcohol and drug use, social supports and utilization of health care services. Researchers hope to identify risk factors, and community, interpersonal and individual-level resources associated with the onset of homelessness among vulnerably-housed individuals, and the attainment of stable housing among homeless individuals. Additionally, they hope to determine the rate at which homeless individuals achieve residential stability and the rate at which vulnerably housed participants become homeless over a two-year follow-up. The study is scheduled to conclude in February 2014.
Heart research gets pumped up

Dr. Karin Humphries received the UBC Heart and Stroke Foundation Professorship in Women’s Cardiovascular Health in the fall of 2011, forming the first research program in British Columbia to focus on gender-based differences in cardiovascular disease. Dr. Karin Humphries will develop a focused and integrated vision for cardiovascular care, education and research for women throughout the province, including rural communities. The professorship will be based at St. Paul’s Hospital.

Dr. Humphries will focus on researching the detection and early treatment of cardiovascular disease and finding new ways to improve the education of physicians, women and their families on heart disease and stroke. She will also develop strategies to improve outcomes for women at highest risk, including Aboriginal and South Asian women and those of poor socioeconomic status.

CORE researchers to analyze policies for rare disease treatment

Collaboration for Outcomes Research and Evaluation (CORE) Associate Director Dr. Larry Lynd is leading a team of researchers to explore potential funding policies for treating rare diseases. Dr. Lynd and his team were given a five-year grant through CIHR’s Emerging Team: Rare Diseases – Health Services Program in April 2012.

There are currently limited and costly treatment options for rare diseases that are far above average drug costs for common diseases. Dr. Lynd and his team will explore the issue of how much public funding should be spent on drugs for these rare diseases, and develop sustainable drug payment policies and incentives for pharmaceutical firms to consider and adopt lower cost alternatives for treatment. Dr. Lynd serves on the Health Canada Scientific Advisory Committee on Nonprescription Drugs.

CORE is a multidisciplinary group of researchers with expertise in pharmacoepidemiology, health economics, clinical pharmacy, health promotion and program evaluation research. Researchers and methodologists at CORE endeavour to provide evidence to maximize quality of life, and the economic and clinical benefits of drug therapy.
Conferences and Educational Sessions

Clinical Research
Professional Development

Michelle Jones, manager of CHEOS’ Clinical Trials Support Unit, facilitates research education opportunities for the PHC research community.

As the PHCRI representative within N2: Network of Networks, Ms. Jones has made the following available to research staff throughout Providence Health Care: Standard Operating Procedures (SOPs) for Clinical Research; Collaborative Institutional Training Initiative (CITI) online training; and courses, including Good Clinical Practices, Responsible Conduct of Research for Life Sciences & Basic Biomedical Program.

Some of the workshops organized and hosted in 2011–2012 include:

- November 3, 2011, 9:00am to 12:00pm: Clinical Trial Budgets, presented by Pfizer Canada Clinical Operations
- November 4, 2011, 8:30am to 4:30pm: Investigator Training Program Workshop, hosted by Pfizer Canada
- December 13, 2011, 9:00am to 10:30am: Webinar – FDA Safety Reporting Requirements for Clinical Trials: Tips for Compliance
- February 15, 2012, 9:00am to 10:30am: Webinar – Site Patient Recruitment Specialist: Is Your Site Ready?

E-Mental Health Conference

On December 12, 2011, the Addictions and Concurrent Disorders Group, led by Dr. Michael Krausz, hosted their first E-Mental Health Conference at Vancouver General Hospital.

Drs. Chris Richardson and Michael Krausz at December’s E-Mental Health Conference.

Dr. Krausz was appointed the lead on the joint Bell Youth Mental Health IMPACT project a month prior to the conference, and attendees and presenters collaborated and engaged in dialogue on how social media tools and the Internet could be integrated into the current health care system. The conference included presenters from Canada, Switzerland and Germany.

Whistler Winter Workshop on Mental Health and Addiction

Thirty researchers from eight countries participated in an interdisciplinary workshop on addictions research from February 18–25, 2012 in Whistler, BC. The event was chaired by Dr. Michael Krausz.

The participants discussed various scientific perspectives and current issues in the field of addiction research at the event.
Work in Progress Seminars

Work in Progress (WiP) presentations take place at St. Paul’s Hospital in the Hurlburt Auditorium every second Wednesday from 12:00–1:00pm. These seminars provide investigators with an opportunity to present ongoing research, obtain feedback from colleagues and peers, and make new connections for their projects. A light lunch is served.

Below are the Work in Progress abstracts for the presentations that took place in 2011–2012.

September 28, 2011
Dr. Joel Singer: The methodological consultant cometh: Navigating the clinician-researcher collaboration

Abstract: Both the physician/laboratory researcher and the methodological/statistical consultant come in various shapes and sizes and with different levels of expertise and familiarity of each other’s areas. Dr. Joel Singer will discuss some of the ways that both parties can make the best use of the collaboration based on many years of providing consultation. Included among the topics discussed are preparing for the consultation, the language for exchanging information and following up in a way that there is assurance that the parties have understood one another.

October 12, 2011
Mohsen Sadatsafavi: Trends in asthma-related direct medical costs from 2002 to 2007 in British Columbia, Canada: A population-based cohort study using administrative health records

Abstract: Asthma is a prevalent disease, and Canada ranks very high in terms of the burden of asthma in the world. Moreover, the inflow of new therapies and management guidelines creates a dynamic picture for the burden of asthma in Canada. We have capitalized on the comprehensive, high quality health care resource use data of BC (Population BC Data) to estimate the direct health care costs and to evaluate the trend of asthma-related resource use in the province. The analysis shows a rapidly changing pattern of resource use with important implications for policy makers. We will show the preliminary results and also discuss the certain methodological and conceptual challenges inherent in using administrative data in this context.
Work in Progress Seminars continued

October 26, 2011
Dr. Majid Al-Desouki: Mental health and addictions in the Middle East: A transcultural perspective

Abstract: The medical management of mental health and addictions has come a long way over recent times and the stigma towards those with these conditions has diminished significantly over the decades. Nevertheless, there still remains a stigma towards mental health that presents as a significant barrier towards effective treatment. This talk will touch on how these changes came about in the Middle East and how they evidently affected the current perception of mental health and addictions with emphasis on the differences in contrast to North America.

November 9, 2011
Dr. Stephen Hwang: Challenges in understanding the connections between housing and health: The Health and Housing in Transition Study

Abstract: Housing is an important social determinant of health, but delineating the connections between the two can be difficult. Challenges include the unstable and fluctuating housing status of marginalized populations, as well as uncertainty regarding causal pathways and mediating factors. These challenges will be discussed within the context of the Health and Housing in Transition Study, an ongoing observational longitudinal study of almost 1,200 homeless and vulnerably housed adults in Vancouver, Toronto and Ottawa.

November 23, 2011
Drs. Najib Ayas and Peter Dodek: Attributable morbidity and mortality of safety outcomes in ICUs

Abstract: Improving patient safety in intensive care units (ICUs) is an important priority. Several safety outcomes have become popular as targets for improvement but the attributable morbidity and mortality of these outcomes is not always clear. This presentation will describe several safety outcomes in critical care and will describe a multi-pronged quantitative approach to determining the attributable morbidity and mortality of clostridium difficile-associated diarrhea and bleeding while on anticoagulants.

January 18, 2012
Dr. Martha Mackay: Sex and gender differences in symptoms of myocardial ischemia

Abstract: Research has consistently shown that women delay seeking treatment for symptoms of acute coronary syndrome (ACS) longer than do men (continued over).
Work in Progress Seminars continued

Some research has indicated that women’s symptoms of ACS are different from men’s, which could perhaps be an explanation for treatment-seeking delay. However, many studies to date have had methodological flaws, rendering conclusions tenuous. In this prospective study, we used balloon inflation during coronary angioplasty as a model for myocardial ischemia, and questioned participants about their symptoms during this period of known ischemia.

February 1, 2012
Drs. Aslam Anis and Huiying Sun: Comparative effectiveness research and cost-effectiveness analysis: An overview and case study involving the treatment of psoriasis

Abstract: Comparative effectiveness research (CER) describes a range of methodologies that can be used to inform health care decisions by providing evidence on the effectiveness, benefits and harms of different treatment options. Drs. Anis and Sun will present one form of CER using indirect comparisons and a cost-effectiveness analysis of biologic therapies in psoriasis to illustrate how decisions can be informed in the absence of direct evidence.

February 15, 2012
Dr. Dean Regier: New concepts in discrete choice preference measurement: An application to drug treatments for juvenile idiopathic arthritis

Abstract: Stated preference discrete choice methods are increasingly used to quantify the personal utility associated with health and health care. Recent advancements in statistical techniques allow researchers to quantify individual-specific utility, both for the recruited sample and for different samples drawn from a population. There is, however, a paucity of research aimed at improving the precision of individual-level utility estimates. Using a discrete choice experiment that examined parents’ preferences for drug treatments in juvenile idiopathic arthritis, this research explores incorporating a behavioral ‘choice certainty’ question into the discrete choice elicitation approach. The purpose of such an exercise is to use respondents’ choice certainty as a means to improve the precision and face validity of individual-level utility and willingness to pay estimates.

February 29, 2012
Dr. Nick Bansback: Can we use ‘nudges’ to improve clinical decision-making?

Abstract: For many clinical cases, patient preferences are crucial in making appropriate health care decisions. Where benefits do not necessarily outweigh harms, choices usually hinge on trade-offs that only patients can decide on. In recognition of this, decision aids have been developed to help patients understand complex medical information so they can become informed and engage in shared decision-making. However, in decisions that are unfamiliar and require the comprehension of a considerable amount of complicated information, psychology research has shown that people frequently make systematic errors that lead to poor choices. The term “nudge” was first used to describe ‘any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives.” This research seeks to examine whether we can “nudge” patients to overcome these errors, leading to more appropriate decisions.

March 14, 2012
Dr. Peggy Simpson: Creating an evidence-based pathway for delirium

Abstract: Delirium is the most common psychiatric syndrome found in the general hospital setting. The development of delirium in general and postoperative delirium in particular has significant effects on length of hospitalization, cost of care, complications, morbidity, mortality, and long term cognitive impairment. There is good evidence that improved clinical practices can have a significant impact. Delirium has a high incidence in surgical patients and can be predicted, prevented, identified consistently and managed effectively with both pharmacological and non-pharmacological interventions. This presentation provides an overview of the research being conducted at St. Paul’s Hospital that examines current Providence Health Care practices related to the prediction, identification, and management of delirium in general and cardiac surgery patients.
Work in Progress Seminars continued

April 11, 2012
Drs. Verena Strehlau and Michelle Patterson: At Home/Chez Soi: A multi-site, longitudinal trial for homelessness and mental health

Abstract: Verena Strehlau and her colleague Michelle Patterson (SFU) presented an overview and early findings of the At Home/Chez Soi study, which is an ongoing multi-centre, longitudinal randomized controlled trial on homelessness and mental health, funded by the Mental Health Commission of Canada (MHCC). Currently, all 490 Vancouver participants are recruited and 290 of them receive housing and support through the study.

April 25, 2012
Jill Woelfer: Homeless young people and technology: Ordinary experiences, extraordinary circumstances

Abstract: Homeless young people, aged up to 30, have ordinary interactions with technology that are conditioned by the extraordinary circumstances of homelessness. In this talk, Jill Woelfer gave an overview of four years of research investigating the experiences that homeless young people have with information systems such as Facebook and technologies such as mobile phones and music players. She concluded with work-in-progress findings from her dissertation research—a study of the role of music in the lives of homeless young people in Seattle and Vancouver, BC, and associations that may exist between music and risk-taking behaviors.

May 9, 2012
Dr. Amy Salmon: The BC Methadone Prescribing Study

Abstract: Across BC, people wishing to receive methadone maintenance therapy (MMT) for the treatment of opiate dependence continue to encounter multiple barriers to care. Chief among these is the difficulty of finding a physician to provide access to this treatment. Very little research is available to identify what motivates physicians to incorporate MMT into their practice, and what factors physicians identify as being important in decisions to continue or abandon MMT as part of patient care. This presentation describes one effort to address this gap in knowledge: The British Columbia Methadone Prescribing Study. This study explores the factors that impact BC’s MMT prescriber workforce and to understand more about how to support physicians who prescribe MMT, including issues of motivation, workload, physician retention, treatment approaches, and professional development needs.

June 13, 2012
Dr. Karin Humphries: Sex differences in outcome after transcatheter aortic valve replacement (TAVR)

Abstract: Transcatheter aortic valve replacement (TAVR) is an effective alternative to surgical valve replacement in symptomatic patients with severe aortic stenosis, but the impact of sex on outcomes remains unclear. Using data from two of the largest centres in Canada performing TAVR, (St. Paul’s Hospital, Quebec Heart and Lung Institute in Laval) outcomes (mortality/morbidity) by sex was presented and the implication of these findings were discussed.
Twitter

CHÉOS joined Twitter in November 2011, under the handle @CHEOSNews. The account is used to share research, upcoming events and news about our scientists and related research around the world. CHÉOS attends and “live-tweets” events hosted and attended by our scientists and researchers. Currently @CHEOSNews has over 300 followers and 950 updates.

Facebook

CHÉOS created a Facebook page in November 2011. It provides news, updates, photos, and event information for its fans. The page currently has over 80 “likes.”

LinkedIn

CHÉOS has a company page on LinkedIn with 35 followers. It is updated on a weekly basis.

E-newsletter

This year, CHÉOS replaced its quarterly newsletter with a smaller-scale e-newsletter that is published every two weeks. The newsletter provides subscribers with more frequent updates and announcements. Individuals can subscribe to the newsletter on our website.
Hires and Departures

Recently Joined:

- **Sindi Addorisio** – Research Assistant, Study to Assist Longer-Term Opioid Maintenance Effectiveness (SALOME)
- **Litsa Blanis** – Project Manager, Collaboration for Outcomes Research and Evaluation (CORE)
- **Melanie Di Menna** – Research Assistant, Delirium Research Program
- **Jesse Frender** – Research Assistant, Health and Housing in Transition (HHiT) Study Team
- **Jessica Galo** – Research Coordinator, CORE
- **Lyanne Gaspard** – Interviewer, Cedar Project
- **Ladan Hamadani** – Research Coordinator and Social Media Consultant, BC Adolescence and Substance Use Survey
- **Samantha Jung** – Communications Coordinator
- **Amir Khakban** – Research Analyst, CORE
- **Allison Laing** – Research Assistant, Bell Project and Research Assistant, SALOME
- **Ruth Lavergne** – Methodologist
- **Marissa Mar** – Research Assistant, Addictions and Concurrent Disorders Group
- **Fatemeh (Tima) Mohammadi** – Research Analyst, CORE
- **Stephen W. Pan** – Data Management Assistant, Cedar Project
- **Lindsey Parsons** – Interviewer, Cedar Project
- **Joseph Puyat** – Methodologist
- **Tanisha Salomons** – Interviewer, Cedar Project
- **Lindsay Seaby** – Research Nurse, Cedar Project
- **Tyler Thompson** – Communications and Administrative Assistant, Addictions and Concurrent Disorders Group
- **Zafar Zafari** – Summer Student, CORE

Departures:

- **Odette Bodman** – Research Interviewer, ACCEPT Study
- **Denise Bumby** – Nurse, Cedar Project
- **Mercedes de la Caridad Dorrbercker Drake** – Interviewer, Cedar Project
- **Ida Chan** – Communications and Administrative Assistant, Addictions and Concurrent Disorders Group
- **Helen Dunham** – Research Assistant, ICU Research Team
- **Janene Erickson** – Interviewer, Cedar Project
- **Jennifer Lee** – Research Assistant, HHiT Team
- **Janice Palmer** – Research Interviewer, Advance Care Planning Evaluation in Elderly Patients Study
- **Shannon Pidlubny** – HHiT Team
- **Laurel Slaney** – Administrative Assistant for Women’s Heart Health
- **Rod Tomma** – Interviewer, Cedar Project
- **Claire Volpe** – Research Assistant/Interviewer, HHiT Team
- **Xu Wang** – Research Assistant
Research Support Services

In addition to our research efforts, a primary focus of the centre is to provide methodological support to other researchers. Our outcomes-related research services help clinicians and researchers publish evidence-based academic papers on health outcomes and help them develop tools to obtain and analyze data. We have expanded our research services support staff in order to further this mandate to foster research initiatives. Joseph Puyat and Ruth Lavergne, both research methodologists, joined our team this year. Michelle Jones, our manager of clinical trials support, organizes educational seminars and workshops on clinical trial and research methods, and is a member of the Clinical Research Professional Development Group.

CHÉOS research services include:

- Research study design
- Statistical support
- Database development and support
- Assistance with grants
- Mentoring
- Clinical trial protocol development including:
  - Human resource needs assessment
  - Budget planning
  - Data form creation (paper or electronic)
  - Study logistics
  - Study document creation including informed consent form templates, standard operating procedures, study manuals and participant advertising
  - Regulatory process and documentation
  - Project management assessment
  - Training for various tasks, such as clinical research regulations, investigator’s meetings and study procedures for clinical site personnel
  - Study registration

(L to R) Drs. Hubert Wong and Nadia Khan.
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Appendices

I. Peer-Reviewed Journal Publications

II. Invited Presentations

III. Abstracts
Appendix I: Peer-Reviewed Journal Publications


Ruan Y, Pan SW, Chamot E, Qian HZ, Li D, Li QC, Liang HY, Spittal P, Shao Y, Kristensen S. Sexual mixing patterns among social networks of HIV-positive and HIV-negative Beijing men who have sex with men: a multilevel comparison


Appendix II: Invited Presentations


Anis A. “The indirect costs of inflammatory arthritis.” Providence Health Care Research Institute, Move it! The Latest in Mobility Research. Vancouver, BC; Mar 8, 2011.


Anis A. “Methods support and development for CIHR's Strategy on Patient-Oriented Research.” Meeting with Alain Beaudet and members of CIHR SPOR committee and senior staff. UBC Robson Square, Vancouver; Feb 2012.

Ayas NT, Dodek P. “Attributable morbidity and mortality of safety outcomes in ICUs.” CHÉOS, Work in Progress Seminar. St. Paul's Hospital, Vancouver; Nov 2011.


Ayas N. “Health economics of obstructive sleep apnea: Implications for diagnosis and treatment.” World Congress of Sleep Medicine. Quebec City; Sep 2011.


Ayas N. “Restricting resident workhours. The good, the bad, and the ugly.” Visiting Lecturer, Kyoto University Hospital, Hospital-Patient Safety Rounds. Japan; Dec 2011.

Ayas N. “Sleep in the critical care unit.” Visiting presenter, Respiratory Sleep Research Rounds, Brigham and Women’s Hospital, Boston; Aug 2011.

Ayas N. “The public health and economic impacts of untreated obstructive sleep apnea, and a discussion of Canadian guidelines for the diagnosis and management of sleep apnea.” 12th Annual National CPAP Meeting. Kyoto University, Japan; Dec 2011.


Bansback N. “Costs offset by biologic drugs in rheumatoid arthritis.” School of Health and Related Research, University of Sheffield. Western Bank, Sheffield, South Yorkshire, UK; Jun 2, 2011.

Bansback N. “Costs offset by biologic drugs in rheumatoid arthritis.” Arthritis Research UK Epidemiology Unit, School of Medicine, University of Manchester. Manchester, UK; Jun 2, 2011.


Cundiff G. “Should pelvic reconstructive surgeons use grafts?” Women’s Hospital, Zhejiang University School of Medicine. Hangzhou, China; Feb 9, 2012.


Cundiff G. “What is the role of trans-vaginal mesh in prolapse surgery?” Byford Heskett Visiting Professorship, Northwestern University Feinberg School of Medicine. Chicago, IL; Dec 9, 2011.


Gill J. “KDIGO practice guidelines in transplant: How and when should we use them, when should we not?” American Transplant Congress. Philadelphia, PA; May 1, 2011.


Harris D. “When the left hand doesn’t know what the right hand is doing: stroke mimics.” St. Paul’s Hospital Emergency Medicine Update. Whistler, BC; Sep 2011.


Krausz MK. “The early origins of addiction.” CIHR, NIMH, Academy of Finland. Toronto, ON; Apr 2012.


Levin A. “Curiouser and curiouser… the story of kidneys, hearts, PTH, phosphate and vitamin D.” Webcast linked to World Kidney Day Symposium. Madrid, Spain; Mar 2011.

Levin A. “Definition and management of CKD.” KDIGO Clinical Practice Conference. Shanghai, China; Feb 2012.


Lynd L. “Developing a Canadian framework for evaluation and decision-making for expensive drugs for rare diseases through innovation, value, and priority setting.” Canadian Organization for Rare Disorders, 2012 Rare Disease Day Conference. Ottawa, ON; Feb 29–Mar 1, 2012.


Lynd L. “The economics of asthma: it’s about more than the dollars.” 1st International Symposium on the Economics of Asthma and Asthma Care, in conjunction with the 8th World Congress on Health Economics. Toronto, ON; Jul 9, 2011. Keynote Speaker.


Mackay M. “Assumptions about ischemic heart disease: Are we really all the same?” Keynote address for Canadian Council of Cardiovascular Nurses’ Annual Meeting and Scientific Sessions. Vancouver, BC; Oct 24, 2011.

Mackay M. “Assumptions about ischemic heart disease: Are we really all the same?” Canadian Cardiovascular Congress. Vancouver, BC; Oct 22–26, 2011.


Marra CA. “Anti-TNF therapies: Is there a difference in real life?” Highlights of the CADTH Therapeutic Review, IMID. Athens, Greece; Mar 10–12, 2011.


Palepu A. “Addressing harassment spoken and unspoken.” Annual ACP Meeting. San Diego, CA; Apr 8, 2011.

Palepu A. “Breaking down silos: Reinforcing the links between the housing, health and homelessness sectors.” Canadian Housing Renewal Association Pre-Congress. Regina, SK; Jun 20, 2011.

Palepu A. “Careers in internal medicine—Clinician scientist and CIP.” UBC Internal Medicine core academic half day. Vancouver, BC; Jun 1, 2011.


Palepu A. “Knowledge exchange on health and homelessness in Canada on the HHiT study.” Vancouver, BC; Nov 9, 2011.

Palepu A. “Methodological issues in recruiting and following vulnerable populations.” Department of Community Health Sciences/Calgary Institute for Population and Public Health seminar series. Calgary, AB; Dec 9, 2011.


Palepu A. “Update on the GIM Fellowship Program to the Community and Rural Internal Medicine (CRIM) section of the BCMA.” Apr 22, 2011.


Richardson CG. Health of the Homeless: A one day youth homelessness summit. Member of expert panel discussion. Vancouver, BC; Jun 14, 2011.


Sawatzky R. “Diversity and the measurement of quality of life.” CHÉOS, Work in Progress Seminar Series. Vancouver, BC; Sep 8, 2011.

Schechter M. “Why clinical trials?” Launch of the Makerere University Clinical Trials Unit. Kampala, Uganda; Apr 1, 2011. Plenary Speaker.


Appendix III: Abstracts


Finckh Z, Escher M, Liang MH, Bansback N. Factors involved in the decision to take medications to prevent rheumatoid arthritis in first degree relatives of patients with RA. A Discrete Choice Experiment. 2011 American College of Rheumatology ACR/AHRP Annual Scientific Meeting. Chicago, IL; Nov 5–9, 2011.


Levin A. CanPREDDICT: Canadian study for the prediction of dialysis, death and cardiovascular risk in CKD patients: results of one year follow up. World Congress of Nephrology 2011. Vancouver, BC; Apr 8–12, 2011.


Sadatsafavi M, Bedouch P, FitzGerald JM, Marra C, Lynd L. Stepping up the controller medication in asthma patients: impact of various treatment options on costs. European Respiratory Society Annual Congress. Amsterdam, Netherlands; Sep 24–28, 2011.


Westerberg B. Avoiding the “deadly sins” of humanitarian missions: How to “do good” better. AAO-HNSF 115th Annual Meeting & OTO EXPO. San Francisco, CA; Sep 11–14, 2011.


