

ARCC

Canadian Centre
for Applied Research
in Cancer Control

ARCC CONFERENCE 2018

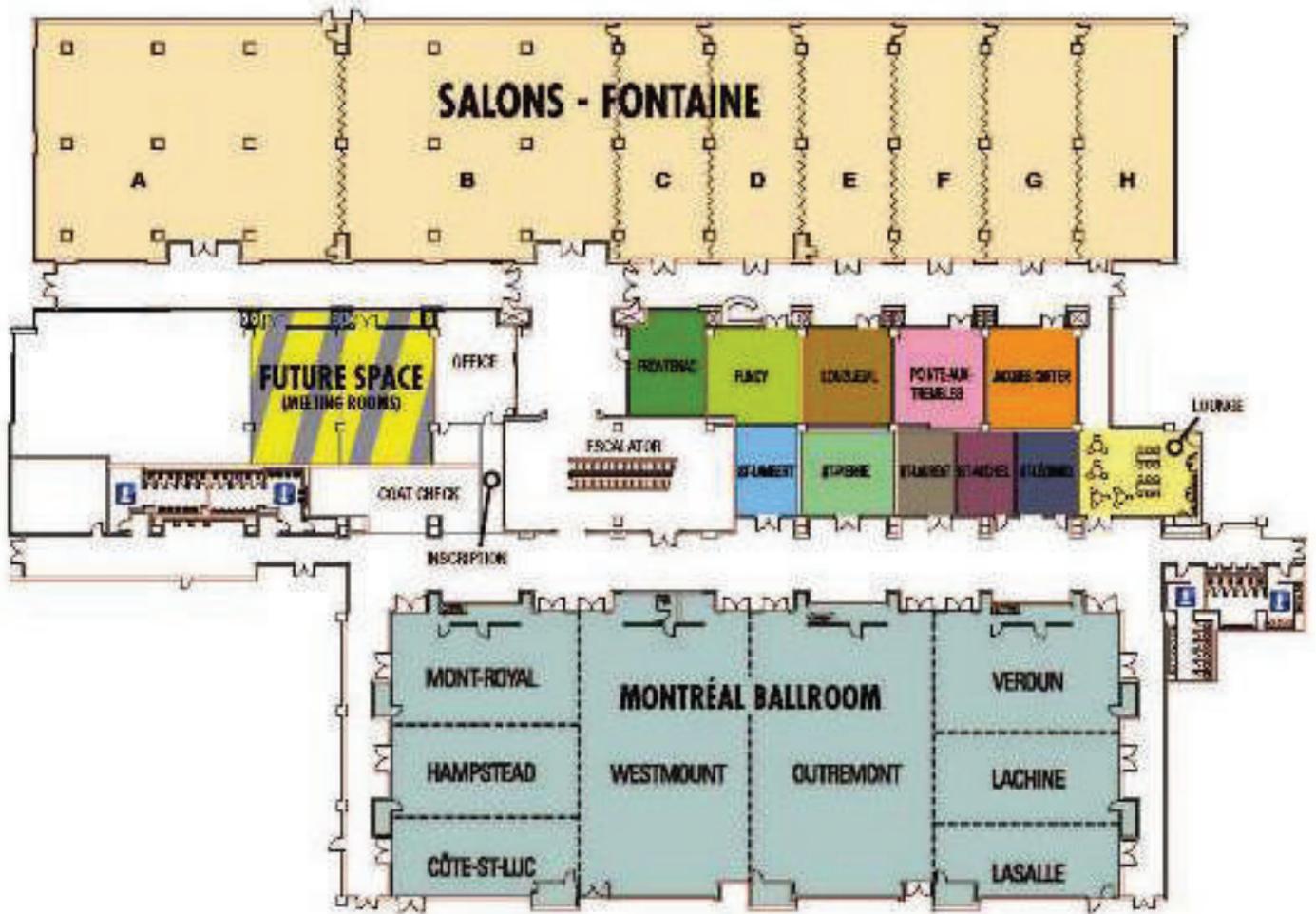
Canada's Applied Research in Cancer Control Conference

CONFERENCE PROGRAM

May 27 – 28, 2018 • Montréal, Québec

Hotel Bonaventure, Montréal

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ACKNOWLEDGEMENTS

CONFERENCE COMMITTEE

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Christopher J. Longo
Stuart Peacock
Dean Regier

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Jennifer Cox
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WELCOME MESSAGE FROM THE CO-CHAIRS

Welcome to Toronto for the 2017 Applied Research in Cancer Control (ARCC) Conference!

The ARCC Conference is a great opportunity to meet the applied cancer research community from across Canada and parts of the world. It features health economics, services, policy and ethics. This conference continues to generate growing interest and still remains the only conference solely focused on applied cancer control research in Canada.

We have an exciting conference planned this year with over 120 oral presentations and scientific posters. We encourage you to share your passion and interests with new people. This is the place! In case you want to meet or connect with somebody at the conference and need help, please contact Rebecca Mercer, our Network Manager (arcc@cancercare.on.ca).

This year we continue to look at the issue of sustainability of the cancer system, with a particular focus on innovation and value. For those arriving earlier on Thursday, we offer you a fireside chat on public engagement, with input from a panel of experts. Don't miss the opportunity to have an informal discussion with public engagement experts Drs. Julia Abelson, Michael Burgess, and Stuart Peacock. They will be on hand to answer your questions and provide insights to success. Our Friday morning plenary will be presented by Drs. Patrick McNeillie, Tania Bubela, and Mike Paulden, who will discuss innovations in cancer treatment and management as seen through clinical, legal, ethical and economic lenses. Our afternoon panel discussion will feature Drs. Craig Mitton, Mandy Ryan, and Deborah Schrag, who will examine the use of evidence and value-based frameworks in cancer control.

Many people contribute to the success of this conference. It is impossible to name them all but special thanks go out to our abstract review team, our judging team, our session chairs, and our logistical liaisons. Special thanks are certainly owed to Rebecca Mercer, Kim van der Hoek, and the team at Face2Face Events whose behind the scenes work is responsible for much of the conference experience.

We are very pleased to have been able to be a part of the 2017 ARCC Conference and are confident you will enjoy the program we have helped develop. We look forward to meeting and chatting with you during the conference, and thank you for supporting ARCC.

Thank you for joining us today and we hope you enjoy the conference!

Christopher J. Longo, PhD

Associate Professor & Director, Health Services Management MBA
Member, Centre for Health Economics and Policy Analysis, McMaster University
Co-Lead, Health Technology Assessment, ARCC

Dean Regier, PhD

Scientist, Cancer Control Research, BC Cancer Agency
Assistant Professor, School of Population and Public Health, University of British Columbia
Co-Lead, Societal Values and Public Engagement, ARCC



WELCOME MESSAGE FROM THE CO-DIRECTORS

Welcome to the 2017 Applied Research in Cancer Control (ARCC) Conference!

The ARCC Conference is an integral aspect of the applied cancer research community, featuring health economics, services, policy and ethics. We are proud to say that our conference continues to grow and remains the only conference focused solely on applied cancer control research in Canada. This year we are very pleased to have our Co-Chairs, Dr. Christopher Longo and Dr. Dean Regier, help plan our program. Chris and Dean have done a wonderful job arranging an exciting program, and we want to extend our deepest thanks to them for their hard work this year.



ARCC is a valuable resource for the applied cancer community, enabling and enhancing applied research, capacity building, and community building in cancer control. In addition, our program area webinars, newsletters and online resources allow the ARCC community to be able to connect in a meaningful way. In the last year, we have expanded to over 950 members from all across the country, and we continue to grow every week. Joining ARCC is free, and we encourage you to join if you are not yet a member – you can join online at <http://cc-arcc.ca/join/>, or email ARCC@cancercare.on.ca for more information.



In the last year we held our first ever open studentship and seed grant competitions. We had an outstanding response, and are proud to be able to support 5 graduate students and 6 investigators this year – we look forward to seeing their presentations at the 2018 ARCC Conference! Congratulations to the recipients, and thank you to everyone who applied – we wish we could have funded everyone, and we look forward to continuing to support the work of the ARCC Network in future years. Stay tuned to our website for opportunities and updates at <http://cc-arcc.ca/>.

We are grateful for the continuous and generous support of the Canadian Cancer Society (CCS). We also appreciate the assistance of the Canadian Association for Health Services and Policy Research (CAHSPR) and our partner organizations in helping making the 2017 ARCC Conference a success.

Thank you for joining us in 2017 and we hope you enjoy the conference!

Dr. Kelvin Chan

ARCC Co-Director
Cancer Care Ontario (CCO)

Dr. Stuart Peacock

ARCC Co-Director
BC Cancer Agency (BCCA)

PROGRAM AGENDA

THURSDAY, MAY 25, 2017 (Pre-Conference Day)

1:30PM – 3:00PM	Fireside Chat: Evidence and Values – Deliberative Public Engagement in Cancer Control Moderated by DEAN REGIER , Scientist, BC Cancer Agency – ARCC Presented by JULIA ABELSON , Professor, McMaster University / MICHAEL BURGESS , Professor, University of British Columbia / STUART PEACOCK , Professor, Simon Fraser University / Distinguished Scientist, BC Cancer Agency	Room: Simcoe
4:00PM – 5:00PM	Speed Networking	Room: York
5:00PM – 7:00PM	Welcome Reception/Poster Viewing	Room: Governor General (3 rd floor)

FRIDAY, MAY 26, 2017

7:30AM – 8:30AM	Registration and Breakfast Buffet breakfast included for conference participants	Room: Toronto Ballroom Foyer
8:30AM – 8:45AM	Welcome Remarks KELVIN CHAN , Co-Director, Canadian Centre for Applied Research in Cancer Control STUART PEACOCK , Co-Director, Canadian Centre for Applied Research in Cancer Control Welcome remarks from Canadian Cancer Society	Room: Toronto Ballroom

8:45AM – 10:15AM MORNING PLENARY SESSION ROOM: TORONTO BALLROOM

Innovation in Cancer Care: The Promise and the Peril

Moderated by **CHRISTOPHER J. LONGO**, Associate Professor, McMaster University

Presented by **PATRICK MCNEILLIE**, Clinical Lead, IBM/Watson / **TANIA BUBELA**, Professor, School of Public Health, University of Alberta / **MIKE PAULDEN**, Assistant Professor, School of Public Health, University of Alberta

10:15AM – 10:30AM Poster Viewing/Nutritional Break Room: Governor General (3rd Floor)

10:30AM – 12:00PM CONCURRENT SESSIONS A

A1	Person- and Patient-Centred Health Care Session Chair: HSIEN SEOW , Associate Professor/Canada Research Chair in Palliative Care and Health System Innovation, McMaster University	Room: York
A2:	Economic Evaluation Session Chair: CLAIRE DE OLIVEIRA , Health Economist, Centre for Addiction and Mental Health	Room: Toronto Ballroom
A3:	New Methods and Tools in Cancer Session Chair: MARK CLEMONS , Medical Oncologist, The Ottawa Hospital Cancer Centre	Room: Simcoe

12:00PM – 1:30PM Lunch Room: Toronto Ballroom Foyer

12:00PM – 1:30PM Poster Viewing Room: Governor General (3rd Floor)

1:30PM – 3:00PM CONCURRENT SESSIONS B

B1:	Comparative Effectiveness & Health Policy Session Chair: CHRISTOPHER J. LONGO , Associate Professor, McMaster University	Room: York
B2:	Personalized Medicine Session Chair: DEAN REGIER , Scientist, BC Cancer Agency - ARCC	Room: Toronto Ballroom
B3:	Screening, Surveillance, & Survivorship Session Chair: WANRUDEE ISARANUWATCHAI , Health Economist, St. Michael's Hospital, Canadian Centre for Applied Research in Cancer Control	Room: Simcoe

3:00PM – 3:15PM Nutritional Break

3:15PM – 4:45PM AFTERNOON PLENARY SESSION ROOM: TORONTO BALLROOM

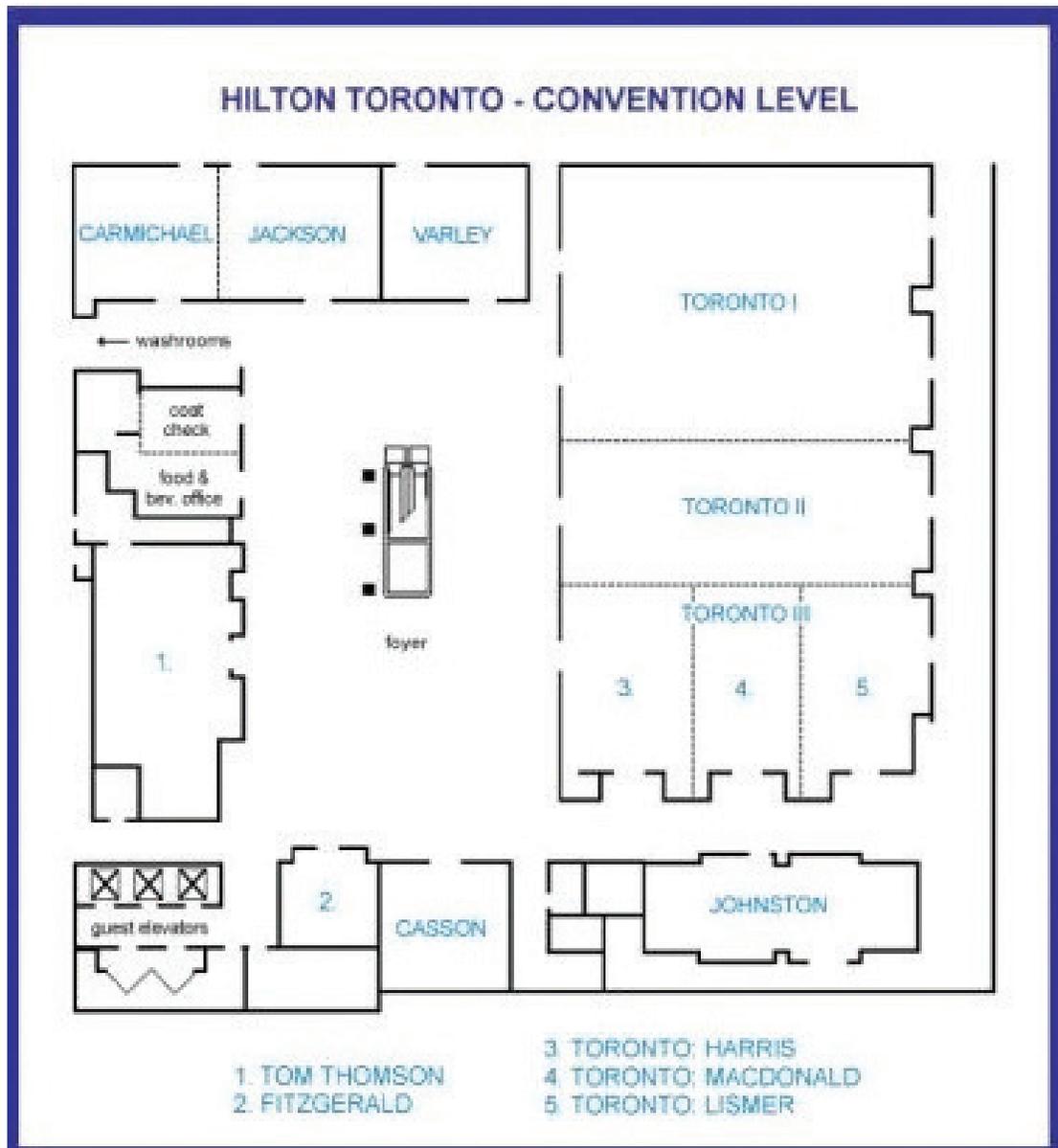
Value-Based Frameworks: Using Evidence and Values to Inform Policy and Practice

Moderated by **DEAN REGIER**, Scientist, BC Cancer Agency – ARCC

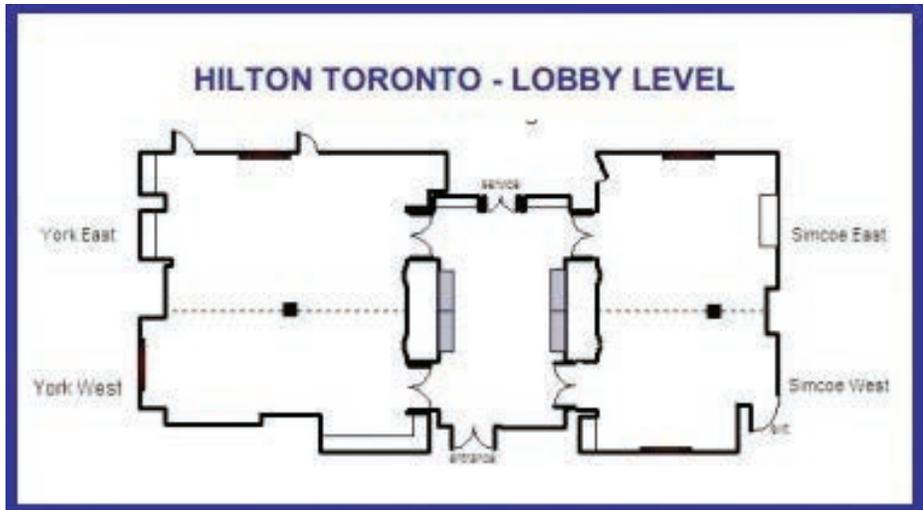
Presented by **DEBORAH SCHRAG**, Chief, Division of Population Sciences, Dana-Farber Cancer Institute; Professor, Harvard Medical School / **CRAIG MITTON**, Professor, Centre for Clinical Epidemiology and Evaluation and School of Population & Public Health, University of British Columbia / **MANDY RYAN**, Professor, Health Economics Research Unit, University of Aberdeen

4:45PM – 5:00PM Adjourning Remarks/Poster Award Winners Room: Toronto Ballroom

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CONFERENCE COMMITTEE



Dr. Kelvin Chan

Dr. Kelvin Chan is a medical oncologist at Sunnybrook Odette Cancer Centre and an Assistant Professor at the University of Toronto. He is also a clinical epidemiologist with a focus in health economics, and a biostatistician. His research interests include health services research, health technology and drug assessments, economic evaluations, systematic review and meta-analysis including network meta-analysis. Professionally, he is interested in drug funding and reimbursement issues. He is a member of Ontario's Committee to Evaluate Drugs (CED) and the Ontario Steering Committee of Cancer Drugs (OSCCD). He is also the clinical lead of the Provincial Drug Reimbursement Programs (RPDP) at Cancer Care Ontario (CCO).



Dr. Christopher J. Longo

Christopher Longo is an associate professor and program director in Health policy and Management, DeGroote School of Business, and a member of the Centre for Health Economics and Policy Analysis, at McMaster University. He is also an associate professor (status only) at the Dalla Lana School of Public Health at the University of Toronto. Dr. Longo has over 20 years of industry and academic experience in clinical research, economic evaluation and access strategies for pharmaceuticals. He has worked or collaborated with the pharmaceutical industry, the Ministry of Health and Long Term Care, Ontario Agency for Health Protection and Promotion, the Canadian Agency for Drugs and Technologies in Health and the National Cancer Institute of Canada. His current research focus examines the costs and economic evaluation of cancer programs and interventions throughout the cancer journey, with the intent of informing policy decision-making.



Dr. Stuart Peacock

Stuart Peacock holds the Leslie Diamond Chair in Cancer Survivorship and is a Professor in the Faculty of Health Sciences, Simon Fraser University. He is currently Co-Director of the Canadian Centre for Applied Research in Cancer Control (ARCC). ARCC is a pan-Canadian research centre providing interdisciplinary leadership in health economics, services, policy and ethics research. Stuart is also a Distinguished Scientist in Cancer Control Research at the BC Cancer Agency, a member of the Board of Directors of the Canadian Agency for Drugs and Technologies in Health, and past President of the International Society on Priorities in Health Care. He has held university positions in Canada, Australia and the UK. Over the past 20 years, Stuart's main research interests have focused on research into developing more effective cancer services, making health system funding decisions fairer and more transparent, and improving the quality of life of cancer patients and survivors.



Dr. Dean Regier

Dean Regier is a Scientist for the Canadian Centre for Applied Research in Cancer Control, and an Assistant Professor, School of Population and Public Health, University of British Columbia. Dr. Regier's research interests include preference-based quality of life valuation and shared decision making for genomics-informed personalized medicine, microeconomic experimental design and analysis of discrete choice data, and Bayesian approaches to estimation and statistical inference. Dr. Regier's methodological contributions to health economics include publications in the areas of econometric analysis of discrete choice data, and incorporating willingness to pay into probabilistic decision analytic models. His applied work consists of economic evaluations alongside clinical trials and Bayesian approaches to cost-effectiveness analysis.

INVITED SPEAKERS



Dr. Julia Abelson, MSc, PhD

Julia Abelson is a professor in the Department of Health Evidence and Impact, and an associate member of the Department of Political Science. She was director of CHEPA from 2006-2011, and is a past recipient of a Canadian Institutes of Health Research New Investigator award, and an Ontario Ministry of Health and Long-Term Care Career Scientist award. She obtained her M.Sc. in Health Policy and Management from the Harvard School of Public Health and her doctorate in social and policy sciences at the University of Bath, U.K. Her research interests include public engagement in health system governance; the analysis of the determinants of health policy decision-making; and the evaluation of innovations in the organization, funding and delivery of health services. Through her research, education and service activities, Abelson works closely with decision-makers in provincial, regional and local governments.



Dr. Tania Bubela, JD, PhD

Dr. Bubela is Professor in the School of Public Health and Adjunct Professor in the Alberta School of Business at the University of Alberta, Canada. She joined the faculty of the U Alberta in 2004 after clerking for The Honourable Louise Arbour at the Supreme Court of Canada, articling at Field Law LLP in Edmonton, and being called to the bar (Law Society of Alberta) in 2005. Her research program in intellectual property and health law related to translational biomedical research brings together her legal training and a PhD in biology and expertise in genetics and molecular biology. Her research program focuses on large collaborative science networks in genomics, gene therapy, and stem cell biology, addressing barriers to the effective translation of new technologies and the introduction of precision medicine. These are varied and include ethical issues, effective communication of risks and benefits among stakeholder groups, commercialization and regulation. She provides advice for Government Health and Science agencies as well as life sciences research communities, and patient organisations. Her research is funded by the Canadian Institutes of Health Research, the Canadian Stem Cell Network, BioCanRx, Genome Canada, and Alberta Innovates – Health Solutions, among others. She co-leads the PACEOMICS program on the development of cost-effective personalized medicine and the Alberta Ocular Gene Therapy Team, which is developing novel gene therapies and conducting a phase I clinical trial of the NighstaRx AAV2-REP1 product for choroideremia. She has nearly 100 publications in law, ethics and science policy journals including Nature, Nature Biotechnology, Cell Stem Cell, PLoS Biology, Trends in Biotechnology, American Journal of Bioethics and Science Translational Medicine.



Dr. Michael Burgess, PhD

Michael M. Burgess is Professor at the W. Maurice Young Centre for Applied Ethics, School of Population and Public Health, with an appointment in Medical Genetics, University of British Columbia. His recent research has been the development of a model for public engagement to inform health and biotechnology policy, in collaboration with Kieran O'Doherty. The model has been used in Australia, Canada and the US, and the most common topic has been biobanks and epidemiology. With Stuart Peacock and Julia Abelson, a hybrid model has been developed for regional and pan-Canadian deliberations on funding decisions for cancer drugs.



Dr. Patrick McNeillie, MD

Dr. Patrick McNeillie is currently working with IBM Watson Healthcare as the Clinical Lead on Watson for Genomics and senior architect of the machine learning team. He attended the University of North Carolina at Chapel Hill School of Medicine, earning his doctorate in medicine. He has been active in basic science and clinical oncology research for more than 10 years with over 30 peer-viewed publications. Prior to joining IBM he spoke extensively about innovations within cancer treatment and in 2012 he won the Pillsbury Award for Outstanding Oral Presentation in Clinical Medicine. In 2013, he took a position at IBM as a Post-Doctoral Research Fellow. During this year he worked along-side IBM computer scientists in applying the cognitive technologies of IBM Watson to healthcare. He decided to extend his time at IBM and was promoted to Chief Physician Researcher of the Medical Sieve Grand Challenge. The goal of this project was to develop technology to for medical image analytics. Recently, he transitioned from IBM Research to Watson Genomics, leading the clinical knowledge and machine learning team.



Dr. Craig Mitton, PhD

Craig Mitton is a Senior Scientist at the Centre for Clinical Epidemiology and Evaluation and a Professor in the School of Population and Public Health in the Faculty of Medicine at UBC where he leads the Master of Health Administration program. The focus of his research is in the application of health economics to impact real-world decision making in health organizations. Craig is a member of the International Society of Priorities in Health Care and co-chaired the Society's 2012 conference in Vancouver. He has published a book entitled the 'Priority setting toolkit: a guide to the use of economics in health care decision making' and has authored or co-authored over 120 peer reviewed publications. Craig has delivered over 150 presentations across many different countries and regularly runs workshops and short courses on health economics and health care priority setting.



Dr. Mike Paulden, PhD

Mike Paulden is an Assistant Professor at the School of Public Health, University of Alberta. He holds an MA in Economics from the University of Cambridge, an MSc in Health Economics from the University of York, and a PhD in Medicine from the University of Alberta. Mike's research interests are in the economic evaluation of health care technologies. He has worked on projects for the UK's National Institute for Health and Care Excellence (NICE), the Ontario Ministry of Health and Long-Term Care and Alberta Health Services. He has contributed to models evaluating the cost-effectiveness of a variety of health technologies and interventions, including screening for post-natal depression, neuromuscle inhibitors for the treatment of influenza, and gene expression profiling for guiding chemotherapy in early breast cancer. Mike's theoretical work focuses upon the incorporation of social values into economic evaluations, including research into perspectives on social choice, cost-effectiveness thresholds, and social rates of time preference for health. This work has addressed a long-running dispute over the use of differential discounting and has challenged current methodological practice in the UK and elsewhere.



Dr. Mandy Ryan, PhD

Mandy is the Director of the Health Economics Research Unit at the University of Aberdeen. She joined HERU in 1987 after graduating from the University of Leicester with a BA (Hons) in Economics and the University of York with an MSc in Health Economics. In 1995 she graduated from the University of Aberdeen with a PhD in Economics concerned with the application of contingent valuation and discrete choice experiments in health economics. In 1997 Mandy was awarded a five-year MRC Senior Fellowship to develop and apply discrete choice experiments in health care; in 2002 she was awarded a Personal Chair in Health Economics by the University of Aberdeen; and in 2006 she was elected as a Fellow of the Royal Society of Edinburgh. She took up the Directorship of HERU in April 2013.

Mandy has worked with academics, government and the pharmaceutical industry and has published widely in the field of health economics generally, and monetary valuation more specifically. She has extensive teaching experience, and currently contributes to HERU's annual expert Discrete Choice Experiment Workshop. In 2012 Mandy was ranked amongst the top health economists in the world, placed 21st on the list of the top 100 health economists, based on a measure of health economics publications and the number of times they have been cited, making her the top-ranked health economist in the UK.



Dr. Deborah Schrag, MD, MPH

Deborah Schrag is a medical oncologist and health services researcher at the Dana Farber Cancer Institute and Professor of Medicine at Harvard Medical School. She serves as the Chief of the Division of Population Sciences at Dana Farber Cancer Institute and leads the Cancer Care Delivery Research Program for the Dana Farber Harvard Cancer Center. Dr. Schrag completed her residency in internal medicine at Brigham and Women's Hospital and a fellowship in medical oncology at Dana-Farber. She was an associate professor of public health and medicine at Weill-Cornell and Memorial Sloan-Kettering where she worked closely with the New York State health department to improve equity in access to care for underserved minority populations. Her work has focused on cancer care delivery in the Medicaid population with attention to remediation of disparities based on race, socioeconomic position and access to specialty health care. Recent work focuses on access to precision medicine and high cost anti-neoplastic therapy as well as longitudinal engagement of cancer patients in reporting outcomes. She is an architect and co-developer of the PRO-CTCAE, the NCI and FDA accredited system for eliciting patient-reported toxicity and symptom burden in clinical trials. Her research portfolio is funded by NCI, AHRQ, and PCORI. Dr. Schrag serves as a member of the NCI standing study section on Health Services Organization and Delivery as well as a member of the National Cancer Policy Forum. She is an Associate Editor of the Journal of the American Medical Association.

CONCURRENT SESSION ABSTRACTS AT A GLANCE

FRIDAY, MAY 26TH, 2017

10:30AM – 12:00PM CONCURRENT SESSIONS A

A1: PERSON- AND PATIENT-CENTRED HEALTH CARE

ROOM: YORK

Session Chair: **HSIEN SEOW**, Associate Professor/Canada Research Chair in Palliative Care and Health System Innovation, McMaster University

- A1.1 Adoption decisions in relation to the available evidence: a closer look at survivorship care plans and patient decision aids**
Presented By: **AMANDA GLENN**, Medical Student, Dalhousie Medical School
- A1.2 Testing patient engagement models in a cancer clinical practice guideline development program: A pilot study**
Presented By: **KAREN SPITHOFF**, Research Manager, McMaster University
- A1.3 Collaboration between patients and their healthcare providers is associated with better self-management skills and well-being during radiotherapy**
Presented By: **CHARLOTTE LEE**, Assistant Professor, Ryerson University
- A1.4 The wows and woes of integrative medicine: Exploring the care experiences of cancer patients in a changing health care milieu**
Presented By: **CHERYL PRITLOVE**, Clinical Research Specialist, Applied Health Research Centre, St. Michael's Hospital
- A1.5 What does meaningful look like? A qualitative study of patient engagement at the pan-Canadian Oncology Drug Review: Perspectives of reviewers and payers**
Presented By: **ALEXANDRA CHAMBERS**, Director, pCODR/CADTH

A2: ECONOMIC EVALUATIONS

ROOM: TORONTO BALLROOM

Session Chair: **CLAIRE DE OLIVEIRA**, Health Economist, Centre for Addiction and Mental Health

- A2.1 Adjuvant Chemotherapy Following Resection of Colorectal Liver Metastases: A Cost-Effectiveness Analysis**
Presented By: **LEV BUBIS**, General Surgery Resident, University of Toronto
- A2.2 Costs of childhood cancer by phase of care: a population-based study in British Columbia and Ontario, Canada**
Presented By: **ROSS DUNCAN**, Health Economist, BC Cancer Agency
- A2.3 Economic burden of bladder cancer due to occupational exposure**
Presented By: **YOUNG JUNG**, Ph.D. Candidate, McMaster University
- A2.4 A cost-utility analysis comparing MR-guided brachytherapy to standard 2D brachytherapy for patients with locally advanced cervical cancer in Ontario, Canada**
Presented By: **WANRUDEE ISARANUWATCHAI**, Health Economist, St. Michael's Hospital, Canadian Centre for Applied Research in Cancer Control
- A2.5 Pharmacoeconomic Analysis of Carboplatin/Pegylated Liposomal Doxorubicin as First-Line Treatment for Platinum-Sensitive Recurrent Ovarian Cancer Patients in Ontario**
Presented By: **KAIWAN RAZA**, Senior Analyst, Cancer Care Ontario

A3: NEW METHODS AND TOOLS IN CANCER

ROOM: SIMCOE

Session Chair: **MARK CLEMONS**, Medical Oncologist, The Ottawa Hospital Cancer Centre

- A3.1 Canadian population weights for the QLU-C10D: a new cancer-specific preference-based instrument**
Presented By: **HELEN MCTAGGART-COWAN**, Senior Health Economist, Canadian Centre for Applied Research in Cancer Control
- A3.2 Novel Methodology for Comparing Standard-of-Care Interventions in Patients with Cancer: Feasibility of the Rethinking Clinical Trials (REaCT) Program**
Presented By: **DEAN FERGUSSON**, Senior Scientist, Ottawa Hospital Research Institute
- A3.3 Multicentre Study to Determine the Feasibility of using an Integrated Consent Model to Compare Three Standard of Care Regimens for The Treatment of Triple-Negative Breast Cancer in the Neoadjuvant/ Adjuvant Setting (REaCT-TNBC)**
Presented By: **JOHN HILTON**, Medical Oncologist, The Ottawa Hospital Cancer Centre
- A3.4 Performing Randomized Pragmatic Studies in Oncology: The Alberta Experience**
Presented By: **JOHN HILTON**, Medical Oncologist, The Ottawa Hospital Cancer Centre
- A3.5 Forecasting Ontario provincial drug expenditures – a hybrid approach to improving accuracy**
Presented By: **YUSEF SHALABY**, Student, Cancer Care Ontario

CONCURRENT SESSION ABSTRACTS AT A GLANCE

FRIDAY, MAY 26TH, 2017

1:30PM – 3:00PM CONCURRENT SESSIONS B

B1: COMPARATIVE EFFECTIVENESS AND HEALTH POLICY

ROOM: YORK

Session Chair: **CHRISTOPHER J. LONGO**, Associate Professor, McMaster University

- B1.1 The clinical and economic impact of primary tumour identification in metastatic cancer of unknown primary tumour: a population-based retrospective matched cohort study**
Presented By: **MALEK B. HANNOUF**, Western University
- B1.2 Feasibility of using an Integrated Consent Model (ICM) to Compare Standard of Care Administration Schedules of G-CSF (filgrastim) for primary prophylaxis of Chemotherapy-Induced Febrile Neutropenia in Early Stage Breast Cancer**
Presented By: **MARK CLEMONS**, Medical Oncologist, The Ottawa Hospital Cancer Centre
- B1.3 Comparative effectiveness of liposomal doxorubicin and topotecan in platinum-resistant epithelial ovarian cancer (EOC) in Ontario: a population based study**
Presented By: **KATARZYNA JERZAK**, Medical Oncologist, Sunnybrook Odette Cancer Centre
- B1.4 An evaluation of the association between statin use and lung cancer risk in chronic obstructive pulmonary disease patients**
Presented By: **ADAM RAYMAKERS**, PhD Candidate, University of British Columbia
- B1.5 Simulation of Sigmoidoscopy Trials for Colorectal Cancer Screening: A Micro-simulation Model Validation Approach**
Presented By: **JOY PADER**, Fellow, Canadian Partnership Against Cancer

B2: PERSONALIZED MEDICINE

ROOM: TORONTO BALLROOM

Session Chair: **DEAN REGIER**, Scientist, BC Cancer Agency - ARCC

- B2.1 Patient preferences and perceived utility of incidental genomic sequencing results**
Presented By: **CHLOE MIGHTON**, Research Assistant, St. Michael's Hospital
- B2.2 Discrete choice experiment to measure patient preferences for massively parallel sequencing genetic testing of colorectal cancer risk**
Presented By: **DEIRDRE WEYMANN**, Health Economist, BC Cancer Agency
- B2.3 Health Economic Analysis of Genomic-Informed Approaches for Lymphoid Cancer Management – A Multifaceted Platform**
Presented By: **SARAH COSTA**, Health Economist, BC Cancer Agency
- B2.4 Using Patient Reported Outcome Measure for Personalized Cancer Care: Impact on Patient Activation and Health Care Utilization**
Presented By: **DORIS HOWELL**, Senior Scientist and Chair Oncology Nursing Research & Associate Professor, Faculty of Nursing, University of Toronto, University Health Network
- B2.5 Preferences for information from panel-based genetic testing among women at increased risk for ovarian cancer**
Presented By: **JENNIFER SHULDINER**, PhD Candidate, University of Toronto

B3: SCREENING, SURVEILLANCE, AND SURVIVORSHIP

ROOM: SIMCOE

Session Chair: **WANRUDEE ISARANUWATCHAI**, Health Economist, St. Michael's Hospital, Canadian Centre for Applied Research in Cancer Control

- B3.1 Preventive health behaviors among cancer survivors compared to controls**
Presented By: **CRAIG EARLE**, Institute for Clinical Evaluative Sciences
- B3.2 Primary care vs. oncology-driven surveillance following adjuvant chemotherapy in resected pancreas cancer**
Presented By: **HAIDER SAMAWI**, Fellow in Health Services Research and Gastrointestinal Oncology, BC Cancer Agency
- B3.3 What is the value of Cancer Care Ontario's Breast Cancer Well Follow-up Care Initiative?**
Presented By: **NICOLE MITTMANN**, Chief Research Officer, Cancer Care Ontario
- B3.4 The websites of organized breast screening programs are not providing balanced information regarding the benefits and harms of mammography screening**
Presented By: **ANNE KEARNEY**, Associate Professor, Memorial University
- B3.5 The development of a colorectal cancer surveillance algorithm in Montreal using administrative health and tumor registry data**
Presented By: **MAMADOU DIOP**, Student, School of Public Health-Department of Social and Preventive Medicine, Université de Montréal

CONCURRENT SESSION ABSTRACTS GUIDE

FRIDAY, MAY 26TH, 2017

10:30AM – 12:00PM CONCURRENT SESSIONS A

A1: PERSON- AND PATIENT-CENTRED HEALTH CARE

ROOM: YORK

Session Chair: **HSIEN SEOW**, Associate Professor/Canada Research Chair in Palliative Care and Health System Innovation, McMaster University

A1.1 Adoption decisions in relation to the available evidence: a closer look at survivorship care plans and patient decision aids

Presented By: **AMANDA GLENN**, Medical Student, Dalhousie Medical School

Background: Randomized controlled trials (RCTs) provide limited evidence to support that survivorship care plans (SCPs) improve survivor distress, satisfaction with care, care coordination, or cancer outcomes. In contrast, RCTs on patient decision aids (PtDAs) demonstrate that PtDAs improve cancer patient's knowledge and participation in decision making, and the quality of decisions made. Despite this, the uptake of PtDAs has been limited whereas SCPs are being implemented in many cancer programs across Canada. The objective of this study was to illuminate the decision making processes involved in the adoption of SCPs and DAs by cancer care teams, including how research evidence is considered, and how additional factors influence these decisions. Materials & Methods: This qualitative study was guided by the principles of grounded theory. In-depth, semi-structured interviews with clinicians, managers, and administrators who work in cancer care programs across Canada were conducted (n=21). Data were collected and analysed concurrently, using a constant comparative analysis approach. The data coding process, analytic decisions, and resultant themes were reviewed, questioned and discussed by two investigators. Data collection and analysis ended when theoretical saturation was reached. Results: For non-therapeutic interventions, participants noted high quality research evidence (i.e., RCTs) is usually unnecessary when making adoption decisions. Indeed, for such interventions, the belief that it is an intuitively good idea often weighs heavily in their decision-making. Six key factors contribute to adoption/non-adoption decisions around SCPs and PtDAs: 1) whether and how the research evidence aligns with clinical experiences, patient experiences/preferences, and local data; 2) perceived benefit to clinicians themselves; 3) endorsement by respected organizations or professional bodies; 4) existence of local champions; 5) ability to adapt to local contexts; and 6) potential reach and thus ability to routinize across a large patient population. Conclusions: This study contributes to our understanding of factors that play a role in the adoption of non-therapeutic interventions by cancer care teams, including how high quality evidence is considered in relation to these important contextual factors.

Co-Authors: Amanda Glenn, Dalhousie Medical School; Robin Urquhart, Queen Elizabeth II Health Sciences Center/Department of Surgery, Dalhousie University/Department of Community Health and Epidemiology, Dalhousie University

A1.2 Testing patient engagement models in a cancer clinical practice guideline development program: A pilot study

Presented By: **KAREN SPITHOFF**, Research Manager, McMaster University

Objectives A key quality component of clinical practice guidelines is the consideration of values and preferences of all relevant stakeholders, including patient representatives. The best strategy for engaging patient representatives in cancer guideline development is yet to be determined. Our objective was to test the feasibility of two patient engagement models at Cancer Care Ontario's cancer guideline development program, the Program in Evidence-based Care (PEBC). Approach In Model 1, two patient representatives actively participated in the guideline development process as members of a guideline working group. In Model 2, patient representatives formed a separate consultation group to review project plans and draft recommendations and to provide feedback to multiple working groups. Training included online resources (Model 1) and a half-day in-person workshop (Model 2). The PEBC's standard patient engagement process served as a control group, and was monitored for comparison. The pilot study was conducted for one year. Satisfaction of patient representatives and guideline working group members with the process and outcome of each model was measured using survey methods, including the Public and Patient Engagement Evaluation Tool (PPEET). Results Three guideline projects engaged patients using Model 1, six projects received patient feedback using Model 2, and one project was used as a control group. For Model 1, patients and working group members expressed overall satisfaction with the process; however, several patients indicated that they felt that their contributions were minimal. In Model 2, patients expressed satisfaction with the process. Key challenges were lack of open engagement between patients and the working group and patient consultation group member attrition. Conclusion This pilot study demonstrated that while both Model 1 and Model 2 are feasible and effective for the engagement of patients in cancer guideline development, modifications are required to optimize the continued interest and contributions of patient representatives over time. The PEBC will use the results of this pilot study to inform the implementation of a patient engagement strategy in their guideline development program.

Co-Authors: Karen Spithoff, McMaster University; Melissa Brouwers, McMaster University ; Caroline Zwaal, McMaster University; Marija Vukmirovic, McMaster University; Sheila McNair, McMaster University

A1.3 Collaboration between patients and their healthcare providers is associated with better self-management skills and well-being during radiotherapy

Presented By: **CHARLOTTE LEE**, Assistant Professor, Ryerson University

Background: Radiation therapy (RT) is a key treatment modality for cancer. Because cancer patients return to home immediately following each treatment day, they assume most responsibilities in managing illness. Thus, enhancing self-management capacity is a key focus of care. Current literature on self-management focuses on education and training about disease-specific skills (e.g., when to take medications for nausea). These are developed in collaboration among patients, families and healthcare providers. Purpose: This study aims to describe the pattern of patient-provider collaboration during RT for cancer and, to examine the associations among patient-provider collaboration, self-management and wellbeing. Method: An observational, cross-sectional survey study was conducted between September, 2014 and December, 2016 at a cancer centre in Ontario. Cancer patients (N=125) completed a one-time questionnaire during RT. Previously validated instruments were used to assess collaboration with healthcare providers, self-management (e.g., adherence, self-efficacy) and patient well-being (e.g., social difficulty, anxiety, symptoms). Associations among study variables will be assessed using structural equation modeling once the entire dataset is entered. Pearson's product-moment correlation and multiple regression are used in the meantime. Findings: At the time of submission, we analysed a dataset of 71 participants. Participants perceived moderate to high levels of collaboration with their physicians, nurses and radiation therapist (means range: 2.95 to 3.93 out of 5, 5 being the most positive). Most participants reported no collaboration with other providers within the allied health team, such as social worker and dietitians (81.2%-86.8%). Significant associations were found between various measures of collaboration and wellbeing, and between self-management and wellbeing. Lastly, self-management variables moderated the relationship between patient-provider collaboration and measures of well-being. For instance, collaboration and well-being measure of anxiety was moderated by self-efficacy [$F(1, 69)=5.49, p$ Conclusion: Patients collaborated mainly with their doctors, nurses and radiation therapists during RT. Also, collaborative relations between patients and providers improved outcomes through enhancing self-management skills. Future initiatives on strengthening relationship to support self-care can be developed for professional groups identified in this study.

A1.4 The wows and woes of integrative medicine: Exploring the care experiences of cancer patients in a changing health care milieu

Presented By: **CHERYL PRITLOVE**, Clinical Research Specialist, Applied Health Research Centre, St. Michael's Hospital

Background: Psychosocial care has traditionally existed on the periphery of medical institutions; however, as the landscape of cancer shifts from an acute to chronic illness, the integration of diverse models of care are gaining increased attention and support. Understanding how psychosocial care is operationalized within acute and biomedical care settings however, remains an underdeveloped area and the experiences of patients within this changing care context are unknown. Project objectives: The Electronic Living Laboratory for Interdisciplinary Cancer Survivorship Research (ELLICSR) is a hospital-based Health, Wellness and Cancer Survivorship Centre that provides psychosocial and supportive care for people living with cancer. This presentation explores the care experiences of patients in the context of a changing health care milieu; the impact of ELLICSR on these care experiences; and the extent to which ELLICSR is integrated into the everyday clinical care practices of the hospital. Methods: A critical ethnographic approach was taken and data collected through: fieldwork, document and policy analysis, semi-structured interviews, and photo-elicitation. A four-step constant comparative analysis was applied across the data. Findings: The findings suggest that the provision of psychosocial and supportive care through ELLICSR made a critical difference in the care experiences of the participants in this study. Specifically, participants explained that the centre helped to fill "crucial" care gaps in the following areas: information about illness and treatments; self-management; psychological and emotional support; assistance managing everyday life; and financial advice/assistance. Despite the perceived benefit of this space however, the study findings also illuminate the challenges of implementing an alternate, and more collective-oriented, model of care in a structure that is predominated by an acute care orientation and a funding system that remunerates acute medical services. Conclusions: This study reaffirms the value of integrated care for people living with cancer, illuminates the challenges involved in integrating models of care, and suggests the need for strengthened systemic commitment and support for fuller integration of psychosocial care in acute and biomedical care contexts.

A1.5 What does meaningful look like? A qualitative study of patient engagement at the pan-Canadian Oncology Drug Review: Perspectives of reviewers and payers

Presented By: **ALEXANDRA CHAMBERS**, Director, pCODR/CADTH

Objective: While there is wide support for patient engagement in health technology assessment (HTA), determining what constitutes meaningful (as opposed to tokenistic) engagement is complex. This paper explores reviewer and payer perceptions of what constitutes meaningful patient engagement in the Pan-Canadian Oncology Drug Review (pCODR) process. Methods: Qualitative interview study comprising 24 semi-structured telephone interviews. The analysis used a qualitative descriptive approach employing techniques from grounded theory. Results: Submissions from patient advocacy groups were seen as meaningful when they provided information unavailable from other sources. This included information unavailable from clinical trials, information relevant to clinical trade-offs, and information about aspects of lived experience such as geographic differences and patient and carer priorities. In contrast, patient submissions that relied on emotional appeals or lacked transparency about their own methods, were seen as detracting from the meaningfulness of patient engagement by conflating HTA with other functions of patient advocacy groups such as fundraising or public awareness campaigns, and by failing to provide credible information relevant to deliberations. Conclusions: This study suggests that misalignment of stakeholder expectations remains an issue even for a well-regarded HTA process that has foregrounded patient engagement since its inception. Support for the technical capacity of patient groups to participate in HTA is necessary but not sufficient to address this issue fully. There is a fundamental tension between the evidence-based nature of health technology assessment and the experientially-oriented culture of patient advocacy. Divergent notions of what constitutes evidence and how it should be used must also be addressed.

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A2: ECONOMIC EVALUATIONS

ROOM: TORONTO BALLROOM

Session Chair: **CLAIRE DE OLIVEIRA**, Health Economist, Centre for Addiction and Mental Health

A2.1 Adjuvant Chemotherapy Following Resection of Colorectal Liver Metastases: A Cost-Effectiveness Analysis

Presented By: **LEV BUBIS**, General Surgery Resident, University of Toronto

ABSTRACT Background: The role of adjuvant systemic chemotherapy following upfront curative-intent resection for colorectal cancer liver metastases (CRCLM) is controversial. Clinical trials have not demonstrated clear survival benefit, although there is evidence of improved disease-free survival with adjuvant chemotherapy; this uncertainty has led to practice pattern variation in its use. A cost-effectiveness analysis of adjuvant chemotherapy versus surveillance-alone would provide important information for practitioners and healthcare policymakers. Methods: Cost-effectiveness analysis from the single-payer Ontario health system perspective was performed on two strategies for management of patients following curative hepatectomy for CRCLM: (A) six months of adjuvant systemic chemotherapy with 5-fluorouracil, leucovorin, and oxaliplatin (FOLFOX; \$2,103/month) and (B) surveillance-alone. A Markov model was developed to simulate clinical care following hepatectomy over a lifetime horizon. Probabilities and costs were derived from focused literature review. Effectiveness was measured in life-years (LY), costs were adjusted to 2016 Canadian dollars, both were discounted 5% and used to calculate the incremental cost-effectiveness ratio (ICER). We utilized a willingness-to-pay (WTP) threshold of \$50,000/LY to determine cost-effectiveness. One- and two-way sensitivity analyses were conducted. Results: Adjuvant chemotherapy was more effective than surveillance-alone (4.7 vs. 4.3 LY) at a cost of \$111,836 vs. \$105,181 (ICER: \$14,843/LY). The model was sensitive to probabilities of recurrence in each strategy and cost of adjuvant chemotherapy. Adjuvant FOLFOX remained cost-effective if the probability of recurrence at three years was 4.3% lower than with surveillance-alone (OR 0.83). Furthermore, FOLFOX was cost-effective when its cost remained under \$5,804/month. Conclusions: This deterministic cost-effectiveness analysis suggests use of adjuvant FOLFOX may be cost-effective versus surveillance-alone following resection of CRCLM. Uncertainty regarding the effectiveness of adjuvant chemotherapy significantly limits the strength of our findings; further evidence regarding the effectiveness of this strategy is needed.

Co-Authors: Vaibhav Gupta, University of Toronto; Natalie Coburn, Sunnybrook Health Sciences Centre; Kelvin Chan, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto, Canadian Centre for Applied Research in Cancer Control; Nicole Look Hong, Sunnybrook Health Sciences Centre; Paul Karanicolas, Sunnybrook Health Sciences Centre; Girish Kulkarni, University Health Network; Lev Bubis, University of Toronto

A2.2 Costs of childhood cancer by phase of care: a population-based study in British Columbia and Ontario, Canada

Presented By: **ROSS DUNCAN**, Health Economist, BC Cancer Agency

Background: Childhood cancer care presents unique issues regarding diagnosis, treatment, late effects, and survivorship, but little is known about costs, which are useful for economic evaluation and healthcare planning. This study estimates and compares childhood cancer-attributable costs in two Canadian provinces by phase of care. Method: Patients diagnosed with cancer aged 0 to 14 years between 1995 and 2010 were identified from British Columbia (BC) and Ontario (ON) cancer registries. Resource-specific costs (Canadian \$, 2012) were estimated for all patients during pre-diagnosis, initial care, continuing care, and the final year of life (for those who died) using linked clinical and administrative healthcare databases. Cancer-attributable costs were calculated by subtracting healthcare costs for propensity-score-matched province-specific samples of children without cancer from costs of children with cancer. Costs in each phase were standardized, for example, to per 360 days for initial, continuing, and final phases. Results: In both cohorts (NBC=1,503;NON=4,606), approximately (33BC, 36 ON)% had leukemia, (22BC, 21 ON)% CNS tumours, 10%BC,ON lymphoma, and (34BC, 33 ON)% other cancers; 93% survived ≥ 1 year. Both provinces reported highest costs in the final phase. Mean overall net costs in BC were \$4,909, \$99,087, \$13,133, and \$310,798 in pre-diagnosis, initial, continuing, and final phases respectively. Ontario mean net costs were \$6,177, \$138,161, \$15,756, and \$316,303 by phase. Inpatient hospitalizations represented 43%, 71%, 52%, and 73%BC and 77%, 77%, 63%, and 82%ON of net costs in each respective phase. CNS tumours had the highest pre-diagnosis costs and leukemia the highest initial cost in both provinces. Leukemia had the highest cost for both continuing and final phases in Ontario. In BC, "other" cancers had highest continuing costs, and lymphoma had highest final phase costs. Conclusions: Hospitalization was the single largest cost driver in both provinces in all phases. Higher overall costs in Ontario are likely due to higher cost per weighted case values in Ontario hospitals. Childhood cancer costs are higher than BC and ON costs for cancer among adolescents or adults.

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A2.3 Economic burden of bladder cancer due to occupational exposure

Presented By: **YOUNG JUNG**, Ph.D. Candidate, McMaster University

There is growing interest in better understanding the number of cancers attributed to occupational exposures and their economic burden. Estimating the number of newly diagnosed cases and quantifying the economic burden of bladder cancer associated with occupational exposures provides important information for decision making in the occupational health and safety policy arena. The objective of this study is to assess, from a societal perspective, the economic burden of bladder cancer using 2011 as the base year for the newly diagnosed cases attributed to occupational exposures.[yj1] Methods: First, we looked at the 40-year exposure period using the Labor Force Survey dataset along with the IARC's list of carcinogens to estimate the relative risk ratio in terms of age and gender. The risk ratios, in conjunction with the proportion ever exposed, estimated the fractions attributable based on Levin's equation. Secondly, the incident-based method and Markov model estimated cancer costs for the 2011 calendar year. A counterfactual, non-cancer population was created to estimate the marginal difference between cancer and non-cancer population regarding direct, indirect costs, and quality of life measure. Transition probabilities, mortality rates, and utilities were obtained from the published literature. Cost parameters were obtained from standard Ontario costing sources. Probabilistic and deterministic analyses were undertaken to address the uncertainties around the parameters. Results: There were 199 newly identified cases – 196 males and 3 females - of bladder cancer due to occupational exposure in 2011. The estimated total lifetime cost of bladder cancer was \$41 million, with an average per-case cost of \$205,900 (2011 dollars), and a reduction in QALYs by 1,315. The direct cost per case was \$55,975 and the indirect cost was \$149,923 for both genders. Direct costs accounted for 27% of the total costs followed by 73% of the indirect costs. Conclusion: The per-case economic burden of bladder cancer due to occupational exposure is substantial, suggesting the importance and value of exposure reduction. Knowledge about the magnitude and number of bladder cancer incidences

Co-Authors: Young Jung, McMaster University ; Emile Tompa, Institute for Work and Health ; Christopher Longo, McMaster University

A2.4 A cost-utility analysis comparing MR-guided brachytherapy to standard 2D brachytherapy for patients with locally advanced cervical cancer in Ontario, Canada

Presented By: **WANRUDEE ISARANUWATCHAI**, Health Economist, St. Michael's Hospital, Canadian Centre for Applied Research in Cancer Control

Purpose: The standard treatment for locally advanced cervical cancer in Ontario is external beam radiotherapy and concurrent cisplatin followed by 2D brachytherapy (2DBT). Magnetic resonance image-guided intracavitary and interstitial brachytherapy (MRgBT) improves cure rates and reduces treatment side effects compared to 2DBT, and is increasingly recognized as the new standard of care. This study was undertaken to evaluate the cost-effectiveness of implementing best-practice MRgBT compared to 2DBT in Ontario. Methods: A Markov cohort model was used for the cost-utility analysis (CUA) from the perspective of the Ontario Ministry of Health and Long-Term Care (MOHLTC) with a five-year time horizon. The CUA evaluated treatment effectiveness, expressed as quality adjusted life years (QALYs), and costs, expressed in 2016 Canadian dollars, for MRgBT and 2DBT. All parameters were obtained from published literature and reviewed by a clinical expert panel. Results were reported as incremental cost-effectiveness ratios comparing MRgBT to 2DBT, for all patients combined, and separately for low (FIGO Stages IA-IIA) and high-risk (FIGO Stages IIB-IV) patients. Parameter uncertainty was explored using sensitivity analyses. Results: MRgBT was a dominant strategy (more effective and less costly) compared to 2DBT for the full population and for both subgroups. The incremental effectiveness was 0.35, 0.19, and 0.43 QALYs per patient for the full population, low-risk subgroup and high-risk subgroup respectively. The corresponding per patient incremental cost-savings were \$1,892, \$134, and \$2,643 respectively. From the deterministic sensitivity analysis, varying the model parameter values individually did not significantly influence the conclusions. The probabilistic sensitivity analysis provided further evidence to support the robustness of the model and the stability of the findings. Conclusions: MRgBT is a more effective and less costly than 2DBT even when uncertainties in the parameters are considered. From a MOHLTC perspective, implementation of this technology cannot be justifiably withheld on the basis of cost. These findings will assist health care providers and policy-makers in Ontario with future infrastructure and human resource planning to assure optimal care of women with this disease.

A2.5 Pharmacoeconomic Analysis of Carboplatin/Pegylated Liposomal Doxorubicin as First-Line Treatment for Platinum-Sensitive Recurrent Ovarian Cancer Patients in Ontario

Presented By: **KAIWAN RAZA**, Senior Analyst, Cancer Care Ontario

KEYWORDS: pegylated liposomal doxorubicin, Caelyx, cost-utility, Markov, platinum-sensitive, ovarian cancer, QALY **PURPOSE:** A health economic model was developed to estimate the cost-effectiveness of carboplatin/pegylated liposomal doxorubicin (C-PLD) compared to carboplatin/paclitaxel (CP) for the treatment of platinum-sensitive recurrent ovarian cancer. **METHODS:** A Markov model was developed in Microsoft Excel to evaluate the costs and effectiveness of C-PLD compared to CP based on the available clinical data from the CALYPSO trial. The model included health states for platinum-sensitive ROC, continued platinum-sensitivity, hypersensitivity to platinum therapy, platinum-resistant disease and death. The model is based on a maximum 8 year time horizon and uses a 1-week modelling cycle length. Costs and effects were discounted at a rate of 5% per year. The perspective of the Ministry of Health was taken for the analysis. We explored scenarios based on different assumptions about expected benefits (no overall survival (OS) benefit, vs. equal risks after progression between arms) and about expected costs (low and high rates of subsequent single-agent PLD in the CP arm). The range of downstream single-agent PLD in the CP arm was based on clinical input for the high estimate (~80%) and New Drug Funding Program (NDFP) data for the low estimate (~30%). Of note, the NDFP data may be an underestimate due to limited follow-up and historical PLD shortage. **RESULTS:** In the base-case, no OS benefit was assumed between treatments, yielding an improvement of 0.049 QALYs based on progression-free survival (PFS) benefit. In this scenario, the C-PLD arm was slightly cost saving. However, when equal risk was assumed between treatments beyond progression, C-PLD yielded a small OS benefit (0.124 LYs) and similar costs. Lower use of downstream single-agent PLD (35%) while assuming no OS benefit yielded extra costs of \$5,950 per patient. Probabilistic sensitivity analysis showed the results to be close to the origin **CONCLUSIONS:** C-PLD and CP appear to have similar costs and effects, but the results depend on assumptions around downstream PLD use and OS benefits associated with C-PLD.

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A3.1 Canadian population weights for the QLU-C10D: a new cancer-specific preference-based instrument

Presented By: **HELEN MCTAGGART-COWAN**, Senior Health Economist, Canadian Centre for Applied Research in Cancer Control

Introduction: The EORTC QLQ-C30 is widely used for assessing quality of life of cancer patients. However, responses on the QLQ-C30 cannot be incorporated as an outcome measure in cost-utility analysis (CUA) because they are not based on general population's preferences, or utilities. To overcome this limitation, the QLU-C10D, a preference-based cancer-specific instrument derived from the QLQ-C30, was developed. The aim of the study was to obtain a Canadian population utility set for the QLU-C10D to enable use in future CUA evaluating cancer therapies. Methods: A discrete choice experiment was administered to a Canadian online research panel. Respondents expressed their preferences for 16 choice sets. Each choice set consisted of two health states described by the ten dimensions of the QLU-C10D plus an attribute representing duration of survival. Responses were analyzed using a conditional logit model. The regression results were converted into utility decrements (i.e., preference to avoid) by evaluating the marginal rate of substitution between each level of the QLU-C10D dimensions with respect to time. Results: 2,514 individuals were recruited to the online survey. 1,592 completed at least one choice set and 1,538 completed all choice sets. Utility decrements were generally monotonic within the dimensions. The largest utility decrements were for the highest levels of physical functioning (-0.258), pain (-0.181), emotional functioning (-0.138), role functioning (-0.128), nausea (-0.099), and social functioning (-0.082). The remaining dimensions – fatigue, bowel problems, lack of appetite, and trouble sleeping – had utility decrements ranging from -0.049 to -0.062 for their highest levels. The utility of the worst possible health state was defined as -0.112. Conclusions: Respondents from the general population were most concerned with generic dimensions (e.g., physical functioning, pain), while cancer-specific dimensions (e.g., nausea, fatigue) were less important. However, it is unclear as to whether these cancer-specific dimensions impact CUA when evaluating cancer treatments. This will be tested in the next phase of the study, where the QLU-C10D utility set is applied to retrospective cancer trials containing QLQ-C30 responses.

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A3.2 Novel Methodology for Comparing Standard-of-Care Interventions in Patients with Cancer: Feasibility of the Rethinking Clinical Trials (REaCT) Program

Presented By: **DEAN FERGUSSON**, Senior Scientist, Ottawa Hospital Research Institute

Introduction: The current clinical trials development and conduct process is cumbersome and expensive, with the majority of studies focusing on either the development of new agents or new indications for established agents. Unfortunately, research comparing standard-of-care interventions is rarely performed, leaving many important and practical patient-centered questions unanswered. We proposed a Rethinking Clinical Trials (REaCT) program that was designed to conduct patient-centered pragmatic comparative effectiveness trials. Methods: The REaCT model is designed to challenge the traditional processes of clinical trial conduct. REaCT combines elements of pragmatic clinical trial design, physician and patient-supported research questions, integrated oral consent, randomisation with an online application in the clinic, avoidance of superfluous study endpoints, electronic data collection and immediate implementation of findings into routine clinical practice. Feasibility has been measured through a combination of: time for research ethics board approval, physician engagement, patient accrual, and patient/physician compliance. Participant knowledge, experience with trial model and satisfaction of the integrated consent procedure was also assessed. Results: Since September 2014, 9 REaCT trials have opened in Ottawa, Kingston, Edmonton, and Kitchener-Waterloo. These trials span the spectrum in oncology with involvement of medical, radiation, and surgical oncologists as local Principal Investigators. Mean time for REB approval has been 3 months. Over 2 years, 741 patients have participated in REaCT trials. Satisfaction surveys performed at the end of the studies demonstrate that 97% of patients were "completely satisfied" with the REaCT process. Conclusion: The REaCT program addresses relevant patient-focussed questions that will not be answered through the current trials model, with a high participant satisfaction rate and at a significantly reduced cost. In doing so, REaCT will increase the relevance and generalizability of research findings to patients, health care providers and policy makers.

Co-Authors: Sasha Mazzarello, The Ottawa Hospital Research Institute; Angel Arnaout, The Ottawa Hospital; John Hilton, The Ottawa Hospital Cancer Centre; Dean Fergusson, Ottawa Hospital Research Institute; Carol Stober, The Ottawa Hospital Research Institute; Mark Clemons, The Ottawa Hospital Cancer Centre

A3.3 Multicentre Study to Determine the Feasibility of using an Integrated Consent Model to Compare Three Standard of Care Regimens for The Treatment of Triple-Negative Breast Cancer in the Neoadjuvant/ Adjuvant Setting (REaCT-TNBC)

Presented By: **JOHN HILTON**, Medical Oncologist, The Ottawa Hospital Cancer Centre

Introduction: Triple-negative breast cancer (TNBC) is a term applied to breast cancer cases that have. Methods: Using the Integrative Consent Model, TNBC patients receiving neoadjuvant/adjuvant chemotherapy would be randomized to one of three standard of care regimens for TNBC: AC-P weekly; AC-P every 2 weeks or FEC-D. Key inclusion criteria were histologically confirmed primary TNBC breast cancer, planned for chemotherapy, and able to provide verbal consent as per the Integrative Consent Model. The primary endpoint was feasibility, which would be reflected through composite endpoints including; physician engagement, accrual rates, physician compliance and satisfaction, and patient satisfaction. Results: REaCT-TNBC opened to accrual on August 30th, 2016. As of January 31st, accrual has been poor, with only 2 patients enrolled on trial. The majority of investigators have not approached potentially eligible patients for participation. A survey of participating oncologists has been performed to identify recruitment issues, and it has been determined that the feasibility endpoints will not be met and the study has been closed to accrual. Conclusions: Despite a pre-trial survey indicating interest in the trial question, REaCT-TNBC will likely be closed early as the study has failed to meet feasibility endpoints. Reasons for futility are being evaluated.

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A3.4 Performing Randomized Pragmatic Studies in Oncology: The Alberta Experience

Presented By: **JOHN HILTON**, Medical Oncologist, The Ottawa Hospital Cancer Centre

Introduction: The REthinking Clinical Trials (REaCT) program was established in Ontario to utilise the integrated consent model for performing pragmatic, cost-efficient trials comparing established standard of care treatments. For example, patients with early stage breast cancer receiving taxotere-cyclophosphamide (TC) chemotherapy are given either ciprofloxacin or growth factor (G-CSF) for primary prophylaxis of febrile neutropenia (FN). Despite considerable differences in cost and side effects, there is no head to head comparison to confirm which is the most effective strategy. Given the differences in public health care funding for G-CSF between Ontario and Alberta, this pilot study provided the ideal opportunity to be extend the REaCT program into another province. Objective: The primary objective was to assess the feasibility of the REaCT-TC study approach evaluating a combination of endpoints including time to open study, accrual, treatment compliance and patient satisfaction. Secondary objectives: to compare rates of FN, hospitalization and clostridium difficile infection. Methods: Breast cancer patients receiving TC chemotherapy are informed about the study using both oral consent and a written consent template. If the patient gives verbal consent, this is noted on the patient chart and she is given either ciprofloxacin or G-CSF prophylaxis using a web-based randomization program. All outcome data are captured electronically. Results: Research Ethics Board (REB) approval took 3 months in Ottawa and an additional 3 months in Alberta. Since September 2014, 7/8 attending medical oncologists have approached patients. 91% (193/211) of approached patients have been randomized, 143 in Ottawa and 50 in Alberta. Physician/patient adherence to allocated treatment is excellent. With data available from 108 patients, 27/392 (7%) chemotherapy cycles have been complicated by FN. End of study survey shows that 97% of patients are "completely satisfied" with the REaCT process. Conclusion: The feasibility of extending the REaCT methodology across provinces been demonstrated through completion of REB review processes, high rates of patient accrual, treatment compliance and patient satisfaction.

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A3.5 Forecasting Ontario provincial drug expenditures – a hybrid approach to improving accuracy

Presented By: **YUSUF SHALABY**, Student, Cancer Care Ontario

Purpose: The Provincial Drug Reimbursement Program (PDRP) at CCO is responsible for monitoring actual and projected outpatient intravenous cancer drug spending in Ontario. A tool was developed incorporating time series analysis to improve forecasting accuracy and assist in tracking the drug budget throughout the fiscal year. Methods: A multiple-method forecasting approach was adopted combining automated time-series forecasting with expert-customizable input. The approach employed linear and non-linear time series techniques, and a combined hybrid model incorporating both approaches. An interactive tool was developed incorporating the statistical models and identified the best performing forecast according to standard goodness-of-fit measures. Model selection procedures considered both the amount of historical expenditure data available per drug policy as well as individual policy contributions to the overall budget. The user was allowed to customize forecasts based on knowledge of external factors related to policy or price changes, and new drugs that come to market. Results: The tool predicted the top three cancer drugs for FY2016 to be: Trastuzumab, Rituximab and Pemetrexed. A comparison of open fiscal year (FY) expenditures from April to October, 2016 showed the tool achieved an automated forecasting error as low as 1.3% for all existing policies. This forecast would be expected to improve based on additional expert knowledge and customized user input. In FY2015, the tool forecasted actual drug expenditures with an error as low as 0.9% for drug policies in existence at the time of comparison. This error was found to be similar to that associated with previous manual projections made in Q4 of FY2015 – comparable accuracy was obtained despite the manual process having 10 months of additional drug expenditures data to inform the projections. Additional comparisons of the forecasting tool and the manual approach are currently being developed and results are forthcoming. Conclusion: The tool will be deployed in budget forecasting for the first time in FY2017/2018. Results have shown the tool to be effective in generating accurate forecasts incorporating both automated and PDRP-informed budget projections.

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B1.1 The clinical and economic impact of primary tumour identification in metastatic cancer of unknown primary tumour: a population-based retrospective matched cohort studyPresented By: **MALEK B. HANNOUF**, Western University

Purpose: The value of identifying the primary tumour in patients with metastatic cancer of unknown primary tumour (CUP) remains questionable and difficult to prove in randomized trials. We assessed the clinical and economic impact of primary tumour site identification in CUP using a retrospective matched cohort study design. Methods: We used the Manitoba Cancer Registry to identify all patients initially diagnosed with metastatic cancer between 2002-2011 who survived at least 6 months following initial diagnosis. We defined patients to have CUP if their primary tumour was found 6 months or more after initial diagnosis or never found during the course of disease. Otherwise, we considered patients to have metastatic cancer from a known primary tumour (CKP). We linked all patients with Manitoba Health administrative databases to estimate their direct healthcare costs using a phase-of-care approach. We used propensity-score matching technique to match each CUP patient with a CKP patient based on all known clinicopathologic characteristics. We compared treatment patterns, overall survival (OS) and phase-specific healthcare costs between the two patient groups and assessed treatment effect on overall survival (OS) using Cox regression adjustment. Results: Of 5,839 patients diagnosed with metastatic cancer, 395 had CUP (6.8%). 1:1 matching created a matched group of 395 patients with CKP. Compared to CKP counterparts, CUP patients were less likely to receive surgery, radiation, hormonal and targeted therapy, and more likely to receive non-targeted cytotoxic empiric chemotherapeutic agents. Having CUP was associated with reduced OS (HR= 1.31 [95%CI= 1.1-1.58]) but this lost statistical significance with adjustment for treatment differences. Compared to CKP patients, CUP patients had a significant increase in the mean net cost of initial diagnostic workup before diagnosis (mean-difference= \$4,622 CAD, 95%CI= \$1,730-\$7,520 CAD) and a significant reduction in the mean net cost of continuing cancer care (mean-difference= \$4,390 CAD, 95%CI= \$1,100-\$7,680 CAD). Conclusion: Compared to CKP patients, CUP patients received fewer cancer treatments, had reduced OS, and used more healthcare resources for diagnostic workup but less healthcare resources

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B1.2 Feasibility of using an Integrated Consent Model (ICM) to Compare Standard of Care Administration Schedules of G-CSF (filgrastim) for primary prophylaxis of Chemotherapy-Induced Febrile Neutropenia in Early Stage Breast CancerPresented By: **MARK CLEMONS**, Medical Oncologist, The Ottawa Hospital Cancer Centre

INTRODUCTION: Despite extensive use of filgrastim as primary febrile neutropenia (FN) prophylaxis in breast cancer receiving chemotherapy, its optimal duration remains unknown. Oncologists tend to prescribe filgrastim for 5, 7 or 10 days, and this results in considerable variability in financial costs and toxicity. The current study was designed to explore the feasibility of using a novel clinical trials methodology to compare these 3 schedules of filgrastim. **METHODS:** Early stage breast cancer patients receiving chemotherapy with filgrastim as primary FN prophylaxis were randomised to receive 5, 7 or 10 days of treatment. The methodology integrated; simply defined study endpoints, ICM incorporating oral consent, web-based randomization in the clinic and real-time electronic data capture. Feasibility was reflected through a combination of endpoints including; physician engagement, time for Research Ethics Board (REB) approval, accrual rates and patient/physician compliance. Secondary endpoints included the first occurrence of either; FN, treatment-related hospitalisation, chemotherapy dose reductions/delays/discontinuation. Feasibility would be met if >50% of appropriate patients approached agree to randomisation and if over 50% of physicians who agree to participate in the study actually approached patients. **RESULTS:** From May 2015 to August 2016, of 102 patients approached for the study, 94% (96/102) agreed to randomization. Eight of 11 (73%) medical oncologists approached and randomized patients. Time from REB approval to opening the study in Ottawa and Kingston was 5 months each, and 9 months in Kitchener. The 96 patients received a total of 333 cycles of chemotherapy. Aggregate incidence of first events is: FN (0.9% 3/333), treatment-related hospitalisation (1.2%, 4/333 chemotherapy discontinuation (2.1%, 7/333), chemotherapy delays (1.2%, 4/333), and chemotherapy reduction (3.6%, 12/333). Overall 9% (30/333 cycles) of chemotherapy and 31% (30/96) patients had one of these events. **CONCLUSION:** This study met both of its feasibility endpoints. This model offers a means of comparing standard of care treatments in a practical and relatively inexpensive way. We are seeking funding for a definitive study to compare rates of FN between the filgrastim schedules.

Co-Authors: Sasha Mazzarello, The Ottawa Hospital Research Institute; Mark Clemons, The Ottawa Hospital Cancer Centre; Mohammed Ibrahim, The Ottawa Hospital Cancer Centre; Andrew Robinson, Kingston General Hospital; Nadia Califaretti, Grand River Hospital; Dean Fergusson, Ottawa Hospital Research Institute; Brian Hutton, The Ottawa Hospital Research Institute; Carol Stober, The Ottawa Hospital Research Institute; Lisa Vandermeer, The Ottawa Hospital Research Institute; John Hilton, The Ottawa Hospital Cancer Centre

B1.3 Comparative effectiveness of liposomal doxorubicin and topotecan in platinum-resistant epithelial ovarian cancer (EOC) in Ontario: a population based study

Presented By: **KATARZYNA JERZAK**, Medical Oncologist, Sunnybrook Odette Cancer Centre

Background: Treatment options for platinum-resistant EOC in Ontario, Canada include either liposomal doxorubicin or topotecan. These agents have demonstrated similar progression free- and overall survival (OS) in a clinical trial setting, but a small sample size and mixed population of platinum-sensitive and platinum-resistant EOC are important limitations of existing data [Gordon et al, J Clin Oncol 2001]. Hence, we assessed the real-world effectiveness and toxicity of liposomal doxorubicin versus topotecan for EOC. Methods: In Ontario, universal public funding is available for either topotecan or liposomal doxorubicin in patients with EOC that is resistant to front-line treatment with platinum-based chemotherapy. All patients diagnosed between 2003 and 2012 and treated with either liposomal doxorubicin or topotecan were identified from Cancer Care Ontario's New Drug Funding Program database; their records were linked to the Ontario Cancer Registry and other administrative databases to ascertain baseline characteristics, health services utilization and outcomes. Multivariable Cox and logistic models were constructed to compare the OS, 30-day mortality, emergency department (ED) or hospital visits between topotecan and liposomal doxorubicin. Observable confounders were adjusted for using propensity score methods. Results: 1589 patients were identified (liposomal doxorubicin: 1315, topotecan: 274); their median age was 62 (interquartile range 53-69). All women received previous platinum-based chemotherapy and 85.6% had a cytoreductive surgical attempt. After adjusting for confounders, the use of liposomal doxorubicin as compared with topotecan was associated with a slightly longer OS [median: 7.5 mos vs. 6.8 mos; HR 0.80, 95% CI 0.66-0.97, p=0.02]. Both treatment regimens afforded similar 30-day mortality and incidence of ED or hospital visits. The findings for patients age \geq 65 and 0.05). Conclusions: "Real world" data suggest that liposomal doxorubicin may be a preferred choice over topotecan for platinum-resistant EOC due to a possible small OS benefit without an increase in hospital visits.

B1.4 An evaluation of the association between statin use and lung cancer risk in chronic obstructive pulmonary disease patients

Presented By: **ADAM RAYMAKERS**, PhD Candidate, University of British Columbia

Background: The prevalence of cardiovascular disease (CVD) is approximately 2-3 times greater in chronic obstructive pulmonary disease (COPD) patients than in the general population. As such, HMG-CoA reductase inhibitors (statins) are commonly used by COPD patients. Evidence suggests that statins may have pleiotropic effects, including reducing elevated levels of systemic inflammation often present in COPD patients, which have been linked to increased lung cancer risk. The objective of this study was to evaluate the association between statin use and lung cancer risk in a cohort of COPD patients. Methods: This study uses linked, population-based administrative data for the province of British Columbia, Canada. To be included in the cohort of COPD patients, a subject needed to receive three COPD-related medications within a 1-year rolling time window. Statin use was then captured after COPD 'diagnosis'. To estimate the association between statin use and lung cancer risk, six different time-dependent exposure metrics were used in multivariate Cox proportional hazards models. These models were then compared based on Akaike Information Criterion (AIC) values to determine the 'best' model. Results: 39,678 patients with COPD were identified, of which 53.5% were female, with a mean age of 70.6 (SD: 11.2) years. Mean follow-up time among patients was 5.1 years during which 12,469 filled at least 1 prescription for a statin. In multivariate analysis, time-dependent statin exposure was associated with a 35% risk reduction for lung cancer risk (HR: 0.65 (95% CI: 0.56-0.76)). The estimated multivariate hazard ratio for recency-weighted duration of use metric showed a 26% reduction in lung cancer risk in statin users relative to non-users (HR: 0.74 (95% CI: 0.67-0.81)). Of all six models incorporating time-dependent exposure metrics in multivariate analysis, the recency-weighted duration of use exposure definition resulted in the best model fit. Conclusions: This results of this study show that statin use by patients with COPD results in significant reduction in the risk of lung cancer. These results were robust across six different metrics of medication exposure.

Co-Authors: Adam Raymakers, University of British Columbia; Mohsen Sadatsafavi, University of British Columbia; Larry Lynd, University of British Columbia; Don Sin, St Paul's Hospital, University of British Columbia; Mark FitzGerald, Vancouver General Hospital, University of British Columbia

B1.5 Simulation of Sigmoidoscopy Trials for Colorectal Cancer Screening: A Micro-simulation Model Validation Approach

Presented By: **JOY PADER**, Fellow, Canadian Partnership Against Cancer

Background and Objective: Alternative colorectal cancer (CRC) screening modalities are being examined worldwide. OncoSim-CRC (version 2.3) is a microsimulation model developed by the Canadian Partnership Against Cancer and Statistics Canada to project clinical and health system impacts of CRC control in the Canadian setting. We aimed to validate the model against randomized controlled trials (RCTs) that evaluated the effect of sigmoidoscopy screening. Approach: International CRC screening RCTs were simulated using OncoSim-CRC, which incorporates Canadian-specific demographics, registry data, health utilities, and risk factors. The trials included the UK Flexible Sigmoidoscopy, Screening for COlon REctum (SCORE), Prostate, Lung, Colorectal and Ovarian (PLCO) and Norwegian Colorectal Cancer Prevention (NORCCAP). Trial cohorts, intervention strategies, screening modalities and outcomes were examined. Model parameters were configured to replicate the screening methods and cohorts of the respective control and intervention groups of each trial. The contamination of the "usual-care" and intervention arms of the PLCO trial was replicated using proportions derived from follow-up studies. Model outputs were scaled to match the proportion of individuals in the control and intervention groups. Simulated outcomes were then compared to observed results in each trial as part of the validation process. We assumed that RCT observed proportional reductions in CRC incidence and mortality would be transferable to Canada. Results: OncoSim-CRC simulated the screening modalities, age groups, sex, length of follow-up, and the compliance rate of each trial, and was able to reproduce the incidence and reduced mortality in each intervention arm. OncoSim-CRC projected mortality reductions between 18-27% compared to the 22-31% reductions across all four trials. Projected incidence reductions were between 17-26% compared to the 18-23% of the RCTs. All projected values were within the 95% confidence interval limits of the observed outcomes of each trial. Conclusions: Despite diverse study designs and settings, especially in the control arms, OncoSim-CRC successfully matched key cohort characteristics and the intervention outcomes of four RCTs. This suggests OncoSim-CRC can project plausible colorectal cancer outcomes for evidence-based cancer control decision-making.

Session Chair: DEAN REGIER, Scientist, BC Cancer Agency - ARCC

B2.1 Patient preferences and perceived utility of incidental genomic sequencing results

Presented By: CHLOE MIGHTON, Research Assistant, St. Michael's Hospital

Objectives: Genomic sequencing (GS) can inform cancer prevention, diagnosis and treatment. Guidelines recommend clinicians inform individuals of their incidental results (IR) when having GS. Policy-makers are grappling with how to value the array of IR produced by GS. We describe patient preferences and perceived utility of IR to inform health technology assessment. Approach: Semi-structured interviews were conducted with 15 breast and colon cancer patients (60% female; 73% >age 50) who took part in usability testing of a decision aid (DA) designed to assist with the selection of IR. 6/15 participants had previously undergone genetic testing. Patients selected from 5 categories of incidental results that were defined as either medically actionable or not. Content analysis was used to analyse the data. Transcripts were coded for categories and themes within and across interviews. Initial codes were derived from topics explored in the interview guide; constant comparison allowed novel codes to emerge from the data. Results: After using the DA, participants were enthusiastic towards GS testing and IR. Indeed, all participants chose to receive some IR; 13 participants selected at least three of the five categories of IR. They expressed an inherent value in learning IR, primarily to inform their disease prevention or treatment. Even when considering IR about diseases without known preventions or treatments, participants believed this information would encourage them take actions to slow or delay onset. Participants also valued learning IR to benefit their relatives' health and to inform their families' future financial or reproductive planning. Although, all participants were in favour of GS, several participants expressed concerns regarding the potential risks associated with learning of their IR, specifically, insurance issues and/or psychosocial concerns. Conclusion: Despite this small sample size, results reveal patients' enthusiasm for receiving IR. Patients apply broader definitions of medical actionability than medical experts, reflecting a key divergence in valuing this incidental information. These findings have implications for clinicians and policy-makers about the expected return and anticipated use of IR from GS.

Co-Authors: Yvonne Bombard, St. Michael's Hospital; Marc Clausen, St. Michael's Hospital; Chloe Mighton, St. Michael's Hospital; Lindsay Carlsson, University Health Network; Selina Casalino, St. Michael's Hospital; Emily Glogowski, GeneDx; Kasmintan Schrader, BC Cancer Agency; Adena Scheer, St. Michael's Hospital; Michael Evans, St. Michael's Hospital; Jada Hamilton, Memorial Sloan Kettering Cancer Center; Kenneth Offit, Memorial Sloan Kettering Cancer Center; Mark Robson, Memorial Sloan Kettering Cancer Center; Nancy Baxter, St. Michael's Hospital; Kevin Thorpe, , University of Toronto; Jordan Lerner-Ellis, Mount Sinai Hospital; Andreas Laupacis, Li Ka Shing Knowledge Institute, St. Michael's Hospital

B2.2 Discrete choice experiment to measure patient preferences for massively parallel sequencing genetic testing of colorectal cancer risk

Presented By: DEIRDRE WEYMANN, Health Economist, BC Cancer Agency

Purpose: Massively parallel sequencing (MPS) of genes may replace traditional diagnostic testing for inherited colorectal cancer and polyposis syndrome (CRCP) because of its improved ability to find causal pathogenic variants. Our study aims to enumerate preference-based personal utility and willingness-to-pay for MPS genetic testing of colorectal cancer (CRC) risk. Methods: The setting is the New Exome Technology in (NEXT) Medicine Study, a randomized control trial of usual care genetic testing versus exome sequencing in Seattle, Washington. Using discrete choice techniques, we elicited patient preferences for information on genetic causes of CRC. We estimated personal utility for the following attributes: proportion of individuals with a genetic cause of CRC who receive a definitive diagnosis, number of tests used to search for genetic cause, wait time for results, and cost. To analyze preference data we estimated an error-component mixed logit model. Results: Of the 184 patients enrolled in the NEXT Medicine study, 122 completed this DCE (66% response rate). Preferences for information on Mendelian genetic causes of CRC were somewhat heterogeneous. On average, participants preferred to undergo genetic tests identifying more individuals with a definitive genetic etiology and involving a shorter wait time for results. Relative to other attributes, the proportion of individuals identified by a test had the largest impact on patient preferences. Assuming that MPS identifies more individuals with a Mendelian form of CRC risk, involves fewer genetic tests, and results in a shorter wait time than traditional diagnostic testing, average willingness-to-pay for MPS ranged from US\$1,600 (95% CI: \$1,255, \$1,946) to US\$1,876 (95% CI: \$1,365, \$2,387). Approximately 80% to 85% of participants were predicted to choose to receive MPS over traditional testing. Conclusion: Patients value information on the genetic causes of CRC and replacing traditional diagnostic testing with MPS testing of CRC risk will increase patients' utility. Future research exploring the costs and benefits of MPS for inherited CRCP is warranted.

Co-Authors: Deirdre Weymann, BC Cancer Agency; David L. Veenstra, University of Washington; Gail P. Jarvik, University of Washington; Dean Regier, BC Cancer Agency - ARCC

B2.3 Health Economic Analysis of Genomic-Informed Approaches for Lymphoid Cancer Management – A Multifaceted Platform

Presented By: **SARAH COSTA**, Health Economist, BC Cancer Agency

Objectives: Our team of researchers at the BC Cancer Agency has developed a research platform for the analysis of costs and effectiveness data of genomics-guided treatments in lymphoid cancer, prior to availability of Phase 3 evidence. Methods: Working alongside a team of clinical researchers, we use health technology assessment methods to investigate cost-effectiveness and preferences for genomics-guided treatment. Economic (Markov) models have been used to investigate the cost-effectiveness of molecularly-guided treatment for the lymphoid cancers. A local micro-costing study was conducted to determine the per-case cost of three commonly used genomic assays. A Discrete Choice Experiment (DCE) is underway to elicit preference-based values for genomic testing from patients, the general public, providers and decision-makers. Results: Our base case models were run over 5 and 10 years. Probabilistic sensitivity analyses (PSA) were conducted using Monte Carlo methods. Incremental cost-effectiveness ratios (ICER) varied: \$280,000/QALY (95% confidence interval [CI]: \$150,000-3,410,000) for relapsed/refractory Hodgkin's lymphoma; \$190,275/QALY (\$74,681-1,248,140) for molecularly-guided treatment in ABC-type diffuse large B-cell lymphoma; and \$145,504/QALY (\$129,977-165,539) for treatment of 17P deleted chronic lymphocytic leukemia. For all modeled diseases, large CIs around mean ICERs were observed due to uncertainty regarding performance of these technologies in future clinical settings. Cost estimates have recently been published for digital gene expression profiling (\$420/case for 20-gene assay), targeted capture sequencing (\$1,029/case) and fluorescence in situ hybridization (\$596/case). Conclusions: The use of genomics-guided treatments to treat common lymphoid cancers will be accompanied by a significant increase in overall healthcare expenditures. Evidence of cost-effectiveness and patient preferences is needed to justify this increased expense. Priority-setting committees in Canada and elsewhere will seek timely economic evidence, such as what we have strived to provide here, to inform decision-making about these genomic technologies.

Co-Authors: Sarah Costa, ; Dean Regier, BC Cancer Agency - ARCC; Ian Cromwell, ARCC-BCCA; Joseph M. Connors, BC Cancer Agency; Stuart Peacock, BC Cancer Agency

B2.4 Using Patient Reported Outcome Measure for Personalized Cancer Care: Impact on Patient Activation and Health Care Utilization

Presented By: **DORIS HOWELL**, Senior Scientist and Chair Oncology Nursing Research & Associate Professor, Faculty of Nursing, University of Toronto, University Health Network

BACKGROUND: The Improving Patient Experience and Health Outcomes Collaborative (iPEHOC) aims to improve health outcomes through uptake of electronic patient reported outcome measures (e-PROMs) in oncology practices in Ontario and Quebec. Building on screening with the Edmonton Symptom Assessment System (ESAS-r), e-PROMs were triggered based on cut scores to focus multidimensional assessment and management of pain (BPI), fatigue (CFS), anxiety (GAD-7) and depression (PHQ-9). METHOD: Using a change management approach pilot sites implemented a standardized education program for clinicians, with targeted PRO education modules for each of the new e-PROMs. Education modules emphasized the use of the PROMs for focused and personalized assessment, patient activation, and collaborative treatment planning. A mixed-method, pre-post quasi-experimental design assessed process and impact of the intervention on patient experience and activation, clinician satisfaction, team collaboration and health care utilization. Mann-Whitney U statistics examined significance of change from baseline to the 8-month post comparison. RESULTS: Over the 8-month implementation period 10,248 ESAS screens were completed in iPEHOC clinics; 17.5% triggered an additional e-PROM. Pre/post comparison of the Patient Activation Measure (PAM) scores revealed an increase in the percentage of patients scoring within the top two ranges of activation (representing patients who have adopted new behaviors, and perceive themselves as their own advocates). Analysis of Ontario program evaluation data revealed a statistically significant increase in mean patient activation levels ($p = 0.045$) as well as a 2% decrease in emergency department visits ($p=0.81$), and 2.2% decrease in hospitalization within 30 days of an e-PROMs completion ($p=0.034$). CONCLUSIONS: Uptake of e-PROMs in diverse settings is complex and demanding. Improving symptom management quality requires PROMs data to be fed-back for 'real-time' use in the clinical encounter and practice change facilitation for meaningful use in routine care.

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B2.5 Preferences for information from panel-based genetic testing among women at increased risk for ovarian cancer

Presented By: **JENNIFER SHULDINER**, PhD Candidate, University of Toronto

BACKGROUND: Panel-based genetic testing for breast and ovarian cancer susceptibility is becoming more common, but little is known about patient preferences for information from such tests. This study examines the relationship of sociodemographic characteristics, cancer-specific distress, perceived cancer risk and the wish for genetic information from panel-based genetic testing. **METHODS:** We conducted a cross-sectional survey of self-referred unaffected women in Ontario who have at least one first-degree relative with ovarian cancer and who are undergoing panel-based genetic testing through a clinical research study. Women had the option to receive genes (A) BRCA1/2 only (B) associated with ovarian and other cancers and have screening guidelines (C) that are thought to increase the risk of ovarian and other cancers and do not have screening guidelines (D) that are known to increase the risks of other cancers (but not ovarian) and have screening guidelines. Information was obtained from an online questionnaire. Using bivariate analysis and logistic regression we determined the relationship of sociodemographic and psychological factors with the wish for genetic information. **RESULTS:** 186 women went through pre-genetic counseling and consented regarding result disclosure. Most women were married (84%), had a post-secondary education (80%), and chose to have all results disclosed (84%). Those with more decisional conflict regarding testing did not want to receive all their genetic information (p < .001). **CONCLUSION:** Our study suggests that in a self-referred, moderate-risk sample most decide to receive all genetic information offered and those that did not want to receive all genetic information had higher levels of decisional conflict. Genetic counselors should be aware that decisional conflict may affect choices for result disclosure.

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B3: SCREENING, SURVEILLANCE, AND SURVIVORSHIP

ROOM: SIMCOE

Session Chair: **WANRUDEE ISARANUWATCHAI**, Health Economist, St. Michael's Hospital, Canadian Centre for Applied Research in Cancer Control

B3.1 Preventive health behaviors among cancer survivors compared to controls

Presented By: **CRAIG EARLE**, Institute for Clinical Evaluative Sciences

The Ontario Health Study (OHS) is a large prospective epidemiologic cohort study in which any Ontario resident eighteen years or older may enroll regardless of prior medical history. Baseline survey data are collected using web-based tools. Among participants that consent to it, we have linked the OHS baseline survey to administrative health data and the cancer registry. Participants either self-reporting a history of cancer or with a cancer diagnosed in the cancer registry were matched 1:1 with controls based on age and sex. Responses to questions about lifestyle behaviors and screening practices were compared. For screening, participants with a history of that cancer and their controls were excluded from the analysis. Age criteria for screening were not considered, but both groups had the same age distribution from matching. There were 13,706 participants with a history of cancer. Cases had a stronger family history of cancer and a slightly greater height. Cases were less likely to report that they were in excellent or very good health. On most measures, participants with a history of cancer had small but statistically significant tendency to worse health behaviors, but were more likely to undergo screening. An exception was the use of artificial tanning equipment which was less among cases. Multivariable analyses confirmed these findings and illustrated that those with a family history were more likely to have undergone cancer screening. Smoking, sedentary lifestyle, high BMI, and poor diet tended to track together, and were associated with lower rates of cancer screening. In the OHS cohort, a history of cancer was consistently associated with poorer health behaviors but more cancer screening. We do not know whether the health behaviors are a cause or an effect of their cancer, or whether behaviors may be influenced by the presence of active cancer in some cases. Regardless, these findings provide support for the concept that attention should be paid to the non-cancer care and counseling that cancer survivors receive.

B3.2 Primary care vs. oncology-driven surveillance following adjuvant chemotherapy in resected pancreas cancer

Presented By: **HAIDER SAMAWI**, Fellow in Health Services Research and Gastrointestinal Oncology, BC Cancer Agency

Background: Major oncology societies outline different recommendations following curative intent treatment for pancreas cancer resulting in wide variations in practice among institutions. We aim to describe patterns of surveillance and evaluate their impact on outcomes. Methods: A total of 147 adult patients who received adjuvant chemotherapy with gemcitabine or 5-fluorouracil monotherapy at any of the British Columbia Cancer Agency centers between 2004 and 2015 were included in this analysis. Surveillance strategies were divided into two groups: discharged to primary care physicians (PCP) or follow up with oncologists that included regular clinical assessments, laboratory testing and/or diagnostic imaging. Results: Median age at diagnosis was 64 (range 38-85) years and 48% were men. More patients were followed by oncologists than PCP (66% vs. 44%). Among the measured prognostic factors, only patients with advanced tumor stage (T3/4) were more likely to be followed by cancer specialists (78% vs. 62%, $P = 0.03$), while age, gender, performance status, node status, pathologic grade and surgical margins were balanced between the two groups. In the entire cohort, 100 (68%) patients had a documented recurrence. Patient followed by oncologists were more likely to receive chemotherapy on recurrence than those followed by PCP (58% vs. 34%, respectively, $P = 0.03$). The median overall survival (OS) was 2.82 (95% CI 2.17-3.32) years in the oncology group and 3.35 (95% CI 2.85-5.06) years in the PCP group while the median relapse free survival (RFS) was 1.4 (95% CI 1.37-1.77) and 2.4 (95% CI 2.07-4.59) years, respectively. On multivariate analysis, there was no significant difference in OS between oncology and PCP-driven surveillance (HR 1.23; 95% CI 0.74-2.04, $P = 0.4$); however, RFS favored the PCP group (HR 1.62; 95% CI 1.01-2.56, $P = 0.04$, for oncology). Conclusions: In this population-based analysis, surveillance tests & imaging performed by oncologists detected recurrences earlier when compared to follow up by PCPs, but this did not result in OS differences. PCPs may have a larger role in the follow up care of selected patients with resected pancreas cancer.

Co-Authors: Haider Samawi, British Columbia Cancer Agency; Winson Cheung, Cancer Control Alberta; Yaling Yin, Gastro-intestinal outcomes unit, BC Cancer Agency; Howard Lim, BC Cancer Agency, Vancouver Centre; Daniel Renouf, BC Cancer agency, Vancouver Centre

B3.3 What is the value of Cancer Care Ontario's Breast Cancer Well Follow-up Care Initiative?

Presented By: **NICOLE MITTMANN**, Chief Research Officer, Cancer Care Ontario

Purpose: Cancer Care Ontario (CCO) implemented the Well Follow-up Care Initiative (WFCI) to transition low-risk breast cancer survivors from oncologist to primary care providers. The objective of this work was to understand and compare the health system resources utilized and their associated costs, among women in the WFCI (cases) and women who were not transitioned (controls). Methods: WFCI cases were linked to provincial administrative databases and matched to a control group (non-WFCI) of women who were not transitioned. Matching criteria consisted of year of diagnosis, cancer stage, age, geographic area of residence, income, comorbidity, and prior health system use. Health system resource utilization of publicly funded physician visits, inpatient hospitalizations, clinic visits and diagnostic tests were determined for both cohorts. Annual mean and median costs (CAD 2014) per patient by cohort were determined. Annualized incremental costs between cases and controls were estimated using generalized estimating equations, accounting for matched pairs. Results: There were 2,324 cases and 2,324 controls (mean age 64.4 and 64.9 years, respectively). There was an average of 2.5 years of follow-up from the transition date. Mean annual visits per patient (WFCI vs. non-WFCI) with a medical oncologist was 0.4 vs 1.3 (p

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B3.4 Information Publicly Available on the Websites of Organized Breast Screening Programs in Canada: A Review and Comparative Analysis

Presented By: **ANNE KEARNEY**, Associate Professor, Memorial University

Organized breast screening has been offered in Canada since 1988. These programs recommend that women, usually between 50 and 74 years of age, are screened regularly with mammography to reduce their risk of dying of breast cancer. There is increasing evidence that population-based mammography screening may not be as effective as reported in the early randomized controlled trials. Specifically, that estimates of mortality reduction have been overestimated and harms to women have been overlooked or underreported. This presentation will report on a review and comparative analysis of the websites of 12 breast screening programs available in Canada. The primary goal of this study is to determine what information is publicly available across Canadian jurisdictions to inform women of the potential benefits and harms of mammography screening and whether choice was emphasized. All publicly available information was extracted from all 12 websites on the same day by 2 independent reviewers, using a data extraction sheet. A third reviewer was involved if consensus could not be reached. Information extracted included eligible age, screening interval, information regarding potential benefits (i.e., less aggressive treatment, mortality reduction) and potential harms (i.e., false positives and additional workup, overdiagnosis and unnecessary treatment, risk from radiation, and risk from treatment including psychological distress). This review and comparative analysis is relevant to policymakers, health practitioners, advocacy groups, and women in Canada, so women can make an informed decision about breast screening.

Co-Authors: Anne Kearney, Memorial University; Andra Morrison, CADTH; Julie Polisena, CADTH

B3.5 The development of a colorectal cancer surveillance algorithm in Montreal using administrative health and tumor registry data

Presented By: **MAMADOU DIOP**, Student, School of Public Health-Department of Social and Preventive Medicine, Université de Montréal

Our objectives were to 1) develop an algorithm to identify incident colorectal cancer (CRC) cases using administrative data from la Régie de l'assurance maladie du Québec (RAMQ) and the Quebec Tumor File (FITQ), and 2) evaluate its performance relative to current case identification methods in terms of the number of cases identified in total and among different patient groups. Quebec physician billing (SERVMED), hospitalization (MED-ECHO), prescription drug, and tumor file data were linked to create a dataset composed of 2,013,430 Montreal residents age 20 years or older who utilized health services from April 1, 2000 to March 31, 2010. We assessed 3 algorithms and selected the one that performed best according to the number of cases identified and their concordance with those identified with the FITQ. The selected algorithm defined a case as a person who had a CRC diagnosis code in MED-ECHO or two codes in SERVMED, separated by at least 30 days over two years. Cases which did not appear in the FITQ were assessed using cancer treatment codes in SERVMED or chemotherapy in the prescription drug file. Preliminary analyses indicate the algorithm identified 13,076 of the 13,077 incident CRC cases contained in the FITQ. It also identified 4040 additional cases, of which 99.8% received CRC treatment. The percentage of women, people less than 50 years old, and people who live in socioeconomically advantaged areas was higher among the additional cases compared to those identified by the FITQ. The algorithm is probably more sensitive to cases diagnosed early and those amenable to screening than the FITQ. The FITQ underestimates the burden of CRC, especially in certain socio-economic groups where effective screening could have a significant impact. The selected algorithm detects more cases of CRC than the FITQ. It provides a more complete picture of CRC incidence and the additional cases appear to be valid. This algorithm could serve as a base for program planning and adjustment of the future Quebec CRC screening program (PQDCCR).

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POSTER ABSTRACTS AT A GLANCE
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POSTER ABSTRACTS

BOARD

HEALTH SYSTEMS, SERVICES, AND POLICY

1 Evaluating an Educational Intervention to Alleviate Distress among Men with Newly-Diagnosed Prostate Cancer and their Partners

Presented By: **LINDSAY HEDDEN**, Postdoctoral Fellow, Centre for Clinical Epidemiology and Evaluation

Background: Diagnoses of cancer distress both patients and their partners. Providing accurate information about diagnosis and treatment options promotes active and informed decision-making and can decrease distress and anxiety. We sought to determine whether an education session alleviated distress for both prostate cancer (PC) patients and their partners; and whether their partner's attendance at the session, as well as specific disease, treatment, and sociodemographic characteristics affect changes in distress levels. Methods: The session consists of a 90-minute didactic presentation, followed by an 8- to 10-minute private session with a urologist and radiation oncologist. We assessed distress using the Distress Thermometer (DT) and compared pre- and post-session distress, and change in distress between patients and partners using matched and unmatched t-tests. We also assessed before the session anxiety using the Generalized Anxiety Disorder measure (GAD), and decisional certainty using the Decisional Conflict Scale. Results: 71 patients and 48 partners participated in the study. Attending the session led to a significant reduction in median DT score for both patients (4.0 to 3.0, $p=0.0009$) and partners (5.0 vs. 4.0, $p=0.0176$). Partners reported higher distress both before and after the session compared to patients (4.9 vs. 3.8, $p=0.025$ pre-session and 4.2 vs. 3.1, $p=0.032$ post-session). The presence of a partner at the session did not appear to affect patients' pre- or post-session distress nor the success of the session at alleviating distress. Sociodemographic and clinical characteristics had little effect on distress levels. Conclusions: Our study demonstrates that an interdisciplinary education session is equally effective at alleviating distress for both PC patients and their partners. These results can be used to guide the development of supportive care programs more broadly in terms of their ability to address the physiological and psychological needs of PC patients and their families.

Co-Authors: Lindsay Hedden, Centre for Clinical Epidemiology and Evaluation; Richard Wassersug, UBC Department of Urologic Sciences; Sarah Mahovich, Vancouver Prostate Centre; Phil Pollock, Vancouver Prostate Centre; Monita Sundar, Vancouver Prostate Centre; Robert Bell, Vancouver Prostate Centre; S. Larry Goldenberg, UBC Department of Urologic Sciences; Celestia Higano, Seattle Cancer Care Alliance, University of Washington

2 Data Insufficiency for Priority Cancer Care Workforce Research in Canada

Presented By: **LINDSAY HEDDEN**, Postdoctoral Fellow, Centre for Clinical Epidemiology and Evaluation

Background/Introduction: In Canada, several factors may cause new or exacerbate existing health human resources (HHR) shortages in cancer care. Yet, there is surprisingly little known about the cancer control workforce landscape in Canada. The purpose of this project was to identify gaps in existing cancer control workforce knowledge and to map those gaps to the available data resources that might be used to address them. Methods: We used a three-phase, mixed-methods approach. First, we developed a national "asset map" of existing cancer control workforce data. Second, we conducted a scoping review of the academic and grey cancer control HHR literature to identify key workforce-related questions. Finally, we mapped the key workforce questions to the existing data sources. Results: Fifty-four data holders responded to our request for information and 41 databases relevant to the scope of this study were identified. Thirty-two studies met the inclusion criteria of our literature review, identifying four general categories for cancer workforce research priorities: access to care and supply of cancer workforce; overtime/unpaid time; job dissatisfaction and absenteeism; and increased pressure to meet patient expectations/needs. Data elements within the relevant databases contain limited information that could be used to address the identified cancer workforce research priorities. In most cases, existing databases available to researchers could be used to describe socio-demographic information about individual professions, including their distribution, education, and employment. Information from provincial and territorial physician payment databases could be used to make some estimate of current supply of physicians working in cancer care. Conclusion: Available data currently prevent researchers and decision-makers from addressing the key research priorities within HHR for cancer care, and from accurately estimating current and future service supply in this area. Little progress has been made over the past decade toward ensuring timely access to a suite of data sources that would help us address cancer care workforce challenges.

Co-Authors: Olena Schell, SPPH; Lindsay Hedden, Centre for Clinical Epidemiology and Evaluation; Morris Barer, UBC School of Population and Public Health

3 **Operational barriers to the integration of patient reported outcome measures in the Ontario cancer system: A multi-perspective framework**

Presented By: **HEIDI AMERNIC**, Research Associate, Cancer Care Ontario

Background: Cancer patients experience symptoms that impact quality of life. Addressing symptoms is a feature of high quality care. Patient reported outcome measures (PROMs) provide patients a platform for self-reporting symptoms to their health care team. These tools support symptom acknowledgement and discussion between the patient and clinician, fostering a person-centred approach to symptom management. Objective: Integration of PROM tools into clinical practice is complex, as multiple factors influence inter-professional team function and clinic flow. Identification of challenges is critical to facilitate smooth integration of PROMs into existing practice. The objective of this project was to identify multi-perspective challenges to PROM integration at key points in clinical flow at regional cancer centres (RCCs) with the goal of creating a PROM integration barriers framework. Approach: The proposed framework incorporates quantitative and qualitative findings from multiple sources reflecting patient, provider, regional and provincial perspectives. Consideration of multiple perspectives is critical because PROM implementation requires engagement and coordination of multiple stakeholders. Barriers were mapped along a generic clinical flow. Results: Patient barriers included technology issues when completing PROMs, and a perception that clinicians do not always acknowledge scores. Providers experienced challenges regarding timely receipt of PROM scores and insufficient time to address scores during clinic visits. Other challenges included insufficient support to assist patients in completing PROMs. Conclusion: The proposed framework serves as a tool to identify and address potential challenges to PROM integration. This will help support current and future PROM integration initiatives, and foster person-centred symptom management.

Co-Authors: Heidi Amernic, Cancer Care Ontario; Colleen Bedford, Cancer Care Ontario; Gillian Hurwitz, Cancer Care Ontario; Nicole Montgomery, Cancer Care Ontario; Farzana McCallum, Cancer Care Ontario; Brett Nicholls, Cancer Care Ontario; Zahra Ismail, Cancer Care Ontario; Lesley Moody, Cancer Care Ontario; Lisa Barbera, Cancer Care Ontario

4 **The Unrecognized Benefits that Communities of Practice can provide to a Provincial Agency**

Presented By: **MICHELLE ANG**, Senior Specialist, Cancer Care Ontario

Objectives: Communities of Practice (CoPs) are comprised of professionals with common areas of practice and interest who deepen their knowledge by interacting on an ongoing basis. Over a 7 year period, Cancer Care Ontario's (CCO) Radiation Treatment Program (RTP) established 7 provincial CoPs with varying foci, producing reports and quality improvement (QI) initiatives, while participating in various knowledge transfer and exchange (KTE) activities. The purpose of this abstract was to identify and quantify unrecognized CoP benefits to CCO. Approach: CoP expert leads and members are encouraged to actively participate and interact with CCO. Through consistent communication, engagement, and coordination, the RTP successfully developed strong relationships between CoP members and leads. This network continues to thrive outside of CoP related functions, allowing ongoing, two-way communication regarding other QI initiatives and topics surrounding their areas of focus and expertise. Results: With 200 current members in 7 CoPs, CCO has been able to quickly identify subject matter experts for use on CCO initiatives through building reciprocal networks. These individuals have been utilized in various capacities, becoming expert reviewers, panelists, quality leads, and core project group members. Overall, 2 CoP members have become provincial clinical quality leads, and 34 other CoP members have been recruited to non-CoP RTP groups so far. This has greatly contributed to the quality and impact of RTP initiatives, expanding the RTP's professional provincial network. CoP facilitation has allowed members to develop increased trust and familiarity with CCO, allowing the RTP to more easily implement non-CoP QI projects through enhanced frontline buy-in. Conclusions: CCO's RTP has been able to benefit from CoP relationship building through the creation of an enhanced pool of involved provincial experts, allowing the RTP to quickly put together project groups, expert panels, steering committees, and vetting processes that have resulted in benefits outside of CoP projects. Important communication networks between CoP members have also been developed and are discussed in a separate report.*

* Please see Poster #15 submitted by Rachel Glickson

Co-Authors: Eric Gutierrez, Cancer Care Ontario; Michelle Ang, Cancer Care Ontario; Carina Simniceanu, Cancer Care Ontario; Elizabeth Lockhart, Cancer Care Ontario; Elizabeth Murray, Cancer Care Ontario; Pdraig Warde, Cancer Care Ontario

5 **Predictors of Attrition in Patients With Metastatic Colorectal Cancer (MCRC)**

Presented By: **ARVIN BAHRABDI**, University of British Columbia / **WINSON CHEUNG**, Provincial Director of Health Services Research, Cancer Control Alberta

Background: While the treatment landscape of cancer has evolved significantly with the introduction of novel and more efficacious agents, the positive impact of these new therapies may be limited by attrition and ultimately non-exposure to later therapy lines. Using a population-based cohort of MCRC, our aims were to characterize rates of attrition and determine factors associated with failure to receive each line of treatment. Methods: Medical records of patients who were diagnosed with MCRC from 2008-10 and referred to any 1 of 5 cancer centers in British Columbia were merged with systemic therapy data from the provincial pharmacy database. We classified patients into mutually exclusive treatment categories: a) receipt of all available lines of MCRC treatments; b) attrition directly attributable to disease, such as cancer progression or death; c) attrition attributable to other clinical factors, including toxicity, and d) attrition secondary to nonclinical factors, including personal/social characteristics. Multivariate logistic regression models were constructed to identify predictors. Results: We identified 525 eligible MCRC patients: median age 64 years, 57% men, 55% Caucasian, 68% ECOG 0/1, 41% and 35% never and ever smokers, respectively. The attrition rate was 40% (95% confidence interval [95% CI], 36%-44%) for first line treatment, 25% (95% CI, 19%-31%) for second line treatment and 14% (95% CI, 5.5%-22.5%) for third line. While cancer progression (31%) and chemo toxicity (30%) were the most common attrition causes, other frequent attrition causes included death (20%) and patient preference (14%). On multivariable analysis, first-line treatment attrition was associated with worse baseline ECOG (odds ratio [OR], 1.92; p. Conclusions: Treatment attrition is a prevalent problem in MCRC and can hinder the benefit of applying sequential treatment algorithms. Some causes of attrition are potentially modifiable and may reflect opportunities for patients to maximize exposure to all lines of therapies.

Co-Authors: Arvin Bahrabadi, University of British Columbia; Jenny Ruan, British Columbia Cancer Agency; Gillian Gresham, British Columbia Cancer Agency; Winson Y. Cheung, BC Cancer Agency & University of British Columbia

6 **Influenza vaccine effectiveness among cancer patients: a population-based study using health administrative and laboratory testing data from Ontario, Canada**

Presented By: **PHILLIP BLANCHETTE**, Medical Oncologist, London Regional Cancer Centre

Background: Seasonal influenza vaccination is recommended for cancer patients despite concerns that disease- or treatment-associated immunosuppression may decrease vaccine effectiveness (VE). The objective of this study was to evaluate VE against laboratory-confirmed influenza hospitalizations among cancer patients. Methods: We conducted an observational test-negative design study of previously diagnosed cancer patients aged ≥18 years who were hospitalized and tested for influenza during the 2010-11 to 2013-14 influenza seasons in Ontario, Canada. We linked individual-level cancer registry, respiratory virus testing, and hospitalization data to identify the study population and outcomes. Vaccination status was determined from physician and pharmacist billing claims. We used multivariable logistic regression to estimate VE, adjusting for age, sex, rurality, neighborhood income, cancer characteristics, chemotherapy exposure, comorbidities, previous healthcare use, season, and month of influenza test. Results: We identified 10,052 hospitalized cancer patients who underwent influenza testing, with 1249 (12.9%) test-positive cases and 4578 (45.5%) vaccinated. Mean age was 71.3 years, 46.6% were male, mean time since diagnosis was 6.4 years, 82.0% had a solid tumor malignancy, 22.0% were receiving active chemotherapy, and 16% had previous chemotherapy exposure. The overall adjusted VE (aVE) against laboratory-confirmed influenza hospitalization was 25% (95%CI, 15%, 34%). Additionally, the observed aVE rate among patients receiving active chemotherapy was 6% (95%CI: -27%, 31%), compared with 30% (95%CI: -2%, 52%) among patients who previously received chemotherapy, and 29% (95%CI: 17%, 39%) among patients who had never received chemotherapy. Conclusion: Overall, our results support general recommendations for influenza vaccination among cancer patients and survivors, but vaccine effectiveness among cancer patients who are actively undergoing chemotherapy is uncertain and warrants further study.

Co-Authors: Phillip Blanchette, London Regional Cancer Centre; Hannah Chung, The Institute of Clinical Evaluative Sciences; Kathleen Pritchard, Sunnybrook Odette Cancer Centre; Craig Earle, Institute for Clinical Evaluative Sciences; Michael Campitelli, Institute for Clinical Evaluative Sciences; Tim Karnauchow, Children's Hospital of Eastern Ontario; Kevin Katz, North York General Hospital; Alison McGeer, Mount Sinai Hospital; Dayre McNally, Children's Hospital of Eastern Ontario; Natasha Crowcroft, Public Health Ontario; David Richardson, William Osler Health Centre; Andrew Simor, Sunnybrook Health Sciences Centre; George Zahariadis, Eastern Health; Jeff Kwong, Institute of Clinical Evaluative Sciences

7 **An environmental scan of knowledge translation activities in cancer surveillance across Canada**

Presented By: **ZEINAB EL-MASRI**, Specialist, Knowledge Dissemination & Evaluation, Cancer Care Ontario

Background: Cancer surveillance sets the foundation for cancer prevention and control and informs decision-making and practice at system-wide levels. Knowledge translation (KT) is integral to cancer surveillance reporting as it facilitates the use of knowledge which guides cancer control strategies and policies. Following research conducted by key leaders through a Canadian Partnership Against Cancer initiative in 2009, there has been an increased focus on KT in the area of cancer surveillance in Canada. Despite recognition of its importance and the growing interest in KT activities in general, interested stakeholders are not often sharing this type of work. Additionally, due to the absence of formal KT studies specific to cancer surveillance, best practices in this area are not well documented; reducing the potential impact KT strategies could have on policy and practice. The project objectives were to identify existing KT frameworks in the area of cancer surveillance and KT strategies implemented across the domains of knowledge synthesis, exchange, and dissemination by cancer surveillance programs across Canada. Methods: An environmental scan was conducted using a mixed-methods approach which included a literature review, a focused Internet scan and key informant interviews with cancer surveillance programs from provinces across Canada. A deductive thematic analysis was conducted to summarize the data. Results: The scan revealed that several provinces consider KT to be essential to their work and are implementing pertinent KT activities across the domains of knowledge synthesis, exchange, and dissemination (e.g., comprehensive statistical reports, advisory committees and social media outlets); however, most provinces do not use a specific framework to guide KT in cancer surveillance. Conclusion: The application of a KT framework specific for cancer surveillance is recommended to better guide the collaborative efforts between those who analyze cancer registry data and those who use it in decision-making and practice. Although this study summarizes KT activities in cancer surveillance across Canada, more efforts are needed toward sharing, evaluating and reporting, in order to establish best practices for KT and cancer surveillance.

Co-Authors: Alessia Borge, Cancer Care Ontario; Zeinab El-Masri, Cancer Care Ontario; Prithwish De, Cancer Care Ontario

8 **Are screening principles used to inform population-based screening decisions? A scoping review and synthesis of recommendations for colorectal cancer screening**

Presented By: **JESSICA BYTAUTAS**, PhD Student, University of Helsinki

Background: Screening principles provide guidance to decision-makers on programmatic decisions about population screening and the types of evidence needed to support such decisions. The WHO principles for screening (Wilson and Jungner, 1968) are still cited regularly, and there have been more than 40 distinct efforts to modify them or establish new ones since they were developed. Despite such apparent interest, it remains unclear whether and how screening principles are used to influence screening decisions. Using the case of population-based programmatic colorectal cancer (CRC) screening, we explored the role of screening principles in published guidelines. Methods: We conducted a scoping review and synthesis of guidance documents for population-based programmatic CRC screening. We developed literature search strategies for both traditional databases (MEDLINE, EMBASE and Scopus) and grey literature (Google, Google Scholar and EBSCO's DynaMedPlus) for the period 1996-2016. Documents were synthesized using both quantitative and qualitative approaches. Results: We identified 20 documents that provided population-based programmatic CRC screening guidance for 11 distinct jurisdictions (8 countries, 2 continents, 1 international). Of the 17 guidelines that referenced screening principles, 9 presented it de novo without any acknowledgement of previously published principles. Of the 8 that cited previously published principles, 5 used them to inform new or modified screening principles, while 3 used existing principles without modification. Only 4 distinct sources were cited, with Wilson and Jungner's principles accounting for almost 70% of citations. The use of principles varied; infrequently, use was instrumental, with clear influence on recommendations; more commonly, use was minimal, unclear or absent. Discussion: Given longstanding interest in screening principles, there is a surprising lack of clarity about how these principles affect screening decisions. This scoping review suggests that their influence remains partial. While often cited, the influence of principles on programmatic decisions about colorectal cancer screening, or the evidence needed to inform such decisions, is generally limited. There is a clear need to design and promote screening principles that can robustly guide these challenging decisions.

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9 **Physicians' Knowledge and Management Practices of Pancreatic Cancer in Nova Scotia: A Mixed Methods Study**

Presented By: **PETER CHO**, Medical Student, Dalhousie University

Background: Nova Scotia (NS) has exceptionally poor outcomes in pancreatic cancer (PC), with a recent study reporting 5-year survival rates of 4.6% in NS, compared to 9.2% for all of Canada. This study aims to explore the knowledge and management practices of specialist physicians involved with PC care in NS, and to identify knowledge gaps in, and barriers to delivering, PC care. Methods: Data were collected with key physician specialties (medical oncologists; radiation oncologists; general surgeons; and internists) using a mixed methods design, consisting of (1) a quantitative survey on PC knowledge and practice, including a series of clinical vignettes to assess management practices (n=35); and (2) follow-up qualitative interviews to elaborate on survey findings (n=8). Survey responses were analyzed by specific physician demographics: specialty, experience, location, and volume. Interviews were analyzed using thematic analysis based on the principles of grounded theory. This process involved concurrent coding and analysis with two investigators. Results: Preliminary analyses reveal that although PC care knowledge was similar across all participants, the perceived needs of the cancer system varied according to the specific role of the physician within the system. Three categories of roles were identified: (1) the "central team" of specialists who work within the high-volume centre; (2) "peripheral" specialists who manage PC patients in rural centres; and (3) "peripheral" specialists whose role is limited to referral to the central team. While all three groups highlighted the biology of PC as the greatest challenge to improving survival, the latter two groups expressed challenges in delivery of quality care due to inadequate communication with the central team and limited expertise on PC. Ultimately, increasing utilization of "cancer navigators" in the peri-diagnostic period to aid PC patients through the cancer system in a timely and streamlined manner was perceived as the most effective intervention to improving PC care. Conclusion: These findings contribute to our understanding of PC care in NS and provide a basis for developing future interventions for improving timely, optimal care in our province.

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10 **The Ontario Breast Screening Program Radiologist Outcome Report: Provider Level Performance Monitoring**

Presented By: **LAUREN CHUN**, Analyst, Cancer Care Ontario

Background: The Ontario Breast Screening Program is an organized breast cancer screening program which screens up to 600,000 women annually. Each year, participating radiologists receive a "Radiologist Outcome Report" (ROR) that describes their performance based on various screening indicators. The report includes national indicator targets and aggregate provincial data for specific indicators. The purpose of the ROR is to promote provider awareness of performance with the intent of encouraging self-directed quality improvement. Radiologists performing below expectations are considered outliers, and receive letters indicating their performance and recommendations to improve practice. The objectives of this presentation are to demonstrate (i) the feasibility of communicating annual provider-level data within an organized screening program and (ii) trends in provider screening indicators overtime as demonstrated in the ROR. Methods: Data for the ROR is extracted from the provincial breast screening database, billing data as well as screening data linkages to the Ontario Cancer Registry. The ROR includes mammography volumes, invasive cancer detection rate (CDR), positive predictive value (PPV), abnormal call rates, interval cancer rates, and is limited to a single page. Each year data on the number of RORs, letters to outliers, and indicator trends are assessed provincially. Results: The number of RORs released increased overall from 2014 (n=501) to 2016 (n=529). Outlier letters also increased from 37 in 2014 to 56 in 2016. For 2011-2013, the CDR, PPV and abnormal call rate for rescreens were 4.0 (95%CI: 3.9, 4.2) per 1,000 screens, 7.0% (95%CI: 6.6%, 7.4%) and 7.1% (95%CI: 6.7%, 7.5%), respectively. In comparison, for 2008-2010, CDR, PPV and abnormal call rate were 3.9 (95%CI: 3.8, 4.1) per 1,000 screens, 7.7% (95%CI: 7.3%, 8.4%) and 6.1% (95%CI: 5.7%, 6.6%), respectively. Conclusions: Although abnormal call rate increased overtime, CDR and PPV remained stable. Data from this report permits monitoring of provider performance by both the provider and program.

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11 **Quality of care improvements resulting from a model of care that incorporates the primary clerk into the care team**

Presented By: **JENNIFER COX**, Schulich School of Medicine, Western University

Background: One common model of care within the oncology outpatient clinic setting is composed of the physician and primary nurse. We propose that the quality of care provided to oncology patients can be improved in this setting by incorporating the primary clerk into the care team, working in the same office space with the physician and nurse. Methods: The three care teams operating under the new model of care were observed during oncology outpatient clinics periodically from February 2016 to May 2016. The primary clerk's interactions with the other team members were recorded, along with other tasks completed by the clerk that did not require team interactions but impacted quality of care. Data was later compiled and organized into four domains that impacted the quality of care provided to patients. Results: The contributions to the care team by the primary clerk include improved clinic flow (e.g., ensuring treatment orders are inputted by the physician), patient convenience (e.g., identifying regularly scheduled blood work that is no longer necessary), patient safety (e.g., identifying patients scheduled for treatment with rituximab that have not had the required Hepatitis B & HIV screening), and hospital flow (e.g., preventing additional workload in the hospital laboratory by identifying when lab work can be combined in already scheduled appointments, and rescheduling clinic visits when results are not yet ready, which translates into time and cost savings to the hospital). Conclusions: As a result of the enhanced quality of care delivered, it is recommended that this model of care be adopted in the place of the traditional model, which lacks the essential element of interaction between the primary clerk and the rest of the care team.

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12 **Timeliness of adjuvant chemotherapy in patients with resected pancreatic cancer**

Presented By: **DAVID DENG**, Medical Student, University of British Columbia

Objective: Timeliness of chemotherapy is an important predictor of survival for patients with breast and colorectal cancer. The effects of treatment timing remain largely unknown for patients with pancreatic cancer. This study aims to identify independent predictors of timeliness and overall survival for this clinical population. Methods: We conducted a retrospective analysis of 179 patients with resected pancreatic cancer who subsequently started adjuvant chemotherapy between 2008 and 2014 at any 1 of 6 cancer centers across British Columbia. Logistic regression was used to identify predictive factors for adjuvant chemotherapy timing. Prognostic factors for survival were ascertained using multivariate Cox proportional hazards models. Results: Our study cohort included 91 males (51%) and 88 females (49%), respectively. At time of diagnosis, 145 patients (81%) had nodal involvement and 107 patients (60%) had good ECOG performance status (ECOG 0-1). The median age of diagnosis was 67 years. The median wait time for start of adjuvant chemotherapy post-resection was 70 (range 19-446) days. Abnormal bilirubin was the only factor significantly correlated with delayed chemotherapy (OR, 3.89; 95% CI, 1.55-9.73; P = 0.004). Median overall survival was 468 days following resection (95% CI, 425-538). Multivariate survival analysis showed that high CA 19-9 levels (HR, 2.44, 95% CI: 1.36-4.40, P = 0.003) and abnormal bilirubin (HR, 0.40; 95% CI, 0.22-0.73; P = 0.003) were prognostic factors for overall survival. Median survival for patients who waited up to 35, 70 or 105 days for chemotherapy following resection were 588 days (95% CI, 270-776), 490 days (95% CI, 360-688) and 466 days (95% CI, 432-538) respectively. Overall, timeliness was not predictive of survival (HR, 1.12; 95% CI, 0.64-1.97; P = 0.70). Conclusion: Serum bilirubin post-resection impacted timeliness of adjuvant chemotherapy, but timeliness did not modify outcomes in study cohort.

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13 **Identifying cancer burden and risk factors across geographic areas in Ontario through a new interactive mapping tool**

Presented By: **TODD NORWOOD**, Staff Scientist, Cancer Care Ontario

Purpose: There is a need for enhanced access to timely data. Cancer Care Ontario has developed Ontario Cancer Profiles, an online, interactive mapping tool that provides instant access to provincial and regional statistics on select cancer burden, risk factor and screening indicators. Methods: Incidence and mortality data were extracted for 23 cancer types from the Ontario Cancer Registry for 2010 to 2012. Population-based data on modifiable cancer risk factors and socio-demographic factors were extracted from the Canadian Community Health Survey (2005/06 and 2013-14) and the 2006 Canadian Census. Several administrative data sources were linked to provide the percentage of screen-eligible Ontarians who were overdue for breast, cervical and colorectal cancer screening. All data were extracted for Ontario and its 14 Local Health Integration Networks. The InstantAtlas™ Dashboard Builder software was used to develop the user interface for publishing this data. Stakeholders were engaged in the development of the tool which was disseminated widely. It's uptake and usage was tracked using Google Analytics. Results: Statistics on select Ontario cancer burden, risk and screening indicators are now easily accessible to the public health community, health care providers, researchers, and other stakeholders through this tool. This is the first publicly available interactive tool offered by a cancer agency in Canada. The tool allows users to examine statistics on two indicators of interest using the double map feature and produce downloadable maps, tables and graphs. Preliminary evaluation results using website analytics will be shared at the time of the conference. Conclusions: This online tool was developed to meet a need for increasing open access to comprehensive Ontario cancer statistics. Employing an off-the-shelf software solution and engaging end users to develop the tool was an effective approach for initiating a self-serve interactive tool for cancer statistics. This tool can be used by stakeholders to profile geographic regions with higher cancer risk to inform the planning, design and delivery of regional cancer prevention and control efforts in Ontario.

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14 **Cancer System Performance Management: Building a Foundation for Research**

Presented By: **JENNA EVANS**, Staff Scientist, Cancer Care Ontario

Purpose: In the absence of operational authority, Cancer Care Ontario (CCO) relies on a robust performance management (PM) system aimed at monitoring and improving the performance of Regional Cancer Programs (RCPs). Although CCO's PM system enables much of the organization's achievements, the PM system itself has not been formally evaluated. The purpose of this study was to synthesize current knowledge on health system PM to guide the evaluation of CCO's PM system. Specific objectives were to identify (a) the components of effective PM systems, (b) factors that influence the effectiveness of PM systems, and (c) approaches to evaluate PM systems. **Methods:** We conducted a literature review of health system PM using PubMed and Google Scholar. Papers deemed relevant for inclusion underwent systematic data extraction to identify components of PM systems, influencing factors and key themes. To identify and organize influencing factors, we synthesized frameworks on behaviour change, quality improvement, and implementation science, and incorporated factors identified by the review. Finally, we conducted a document review and interviews with CCO managers and staff members (n=10) to create a detailed inventory of CCO's PM tools and processes. **Results:** The literature review and interviews identified a range of PM tools and processes, which we organized by function and quality of supporting evidence. The framework of influencing factors consists of 40 factors in 6 categories: (1) PM Tool/Process Characteristics, (2) Individual Characteristics, (3) Social Influences, (4) Organizational/RCP Context, (5) Environmental Factors, and (6) PM Tool/Process Implementation, Modification and Enactment. The literature provides limited guidance on how to systematically evaluate PM systems applied at a health system level rather than at the individual, team or organizational levels. **Conclusion:** This review identified components of PM systems, influencing factors, and overarching themes, which will be used to inform PM research and evaluation activities at CCO. Future work will examine regional variation in the use of CCO's PM tools and processes, compare PM approaches across high-performing health systems, and explore the influence of contextual factors on PM efforts.

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15 **Cancer Care Ontario's Communities of Practice: A Scoping Evaluation**

Presented By: **RACHEL GLICKSMAN**, Student, Cancer Care Ontario

Background: Communities of practice (CoPs) have been described as groups of people sharing common concerns, problems, or passions about a topic, and who deepen their knowledge and expertise by interacting on an ongoing basis. The objective of this study is to evaluate the CoPs created by Cancer Care Ontario's (CCO) Radiation Treatment Program (RTP) on three parameters: knowledge creation, knowledge transfer and exchange (KTE), and community building. **Methods:** An evaluation was conducted on five CoPs: three multi-disciplinary (head and neck, lung, and gynecological cancers) with representation from Radiation Oncology, Medical Physics and Radiation Therapy, and two intra-disciplinary (Radiation Therapy and Medical Physics). Framework was adapted from the Center for Disease Control. Data was collected using prospectively administered member surveys, publications, and interviews with all CoP site leaders and two randomly-selected members of each CoP. **Results:** 257 unique surveys were completed. Interviews were conducted with 18 CoP leads and members (n=20). 95% participants reported that CoP projects were very relevant to their practice and 50% of interviewees reported changes in their practice stemming from involvement in CoPs. Amongst the 5 CoPs, 16 clinical implementations have been developed or are in development. Members reported strengths of the CoP as improving care (8/18), knowledge creation (4/18), knowledge transfer and exchange (11/18), increased collaboration between centres (14/18), and creation of a community (13/18). 90% participants reported growth of their professional network as a result of CoPs. Overall 93% of participants and 100% of interviewees reported CoPs are a worthwhile initiative. The largest challenge of CoPs was identified as the time commitment required to participate. **Conclusion:** CoPs encourage innovation, KTE and improve the sense of community amongst practitioners in Ontario providing a platform to ensure best practices are standardized across the province, resulting in high quality, safe person-centred care. Consideration of how to best address the time constraints of members is necessary to ensure continued participation and efficient development of clinical tools in CoPs.

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16 **Population-Based Standardized Symptom Screening: Cancer Care Ontario's Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP) Provincial Implementation Approach**

Presented By: **FARZANA MCCALLUM**, Lead - Symptom Management, Cancer Care Ontario

Purpose: In 2007, Cancer Care Ontario launched the Edmonton Symptom Assessment System (ESAS), a self-reported instrument measuring symptoms of cancer, with the goal of improving symptom management through standardized symptom screening. Through feedback from patients and providers requesting a disease-specific approach to symptom management, pilots were conducted measuring the feasibility and acceptability of a prostate-specific questionnaire, EPIC-CP. Methods: Results of EPIC-CP implementation pilot revealed a high item completion rate (90.1% to 99.5%) and strong endorsement by clinicians and patients. Quantitative and qualitative findings also indicated the need to address several issues related to implementation. For example, 10% of patients indicated that they did not have enough privacy when completing the questionnaire. These findings informed the development of a provincial implementation strategy that linked the pilot study findings with the Kotter's eight-step process framework for change. The strategy included recommendations with an emphasis on improvement in privacy, education, and communication. Results: Organizational transformation guided by the Kotter framework and led by clinical champions included a multi-site phased implementation occurring in four waves (October 2016-August 2017), through a multidisciplinary leadership team for provincial oversight and IT solutions; visits to individual centers; EMR integration guidelines; development of educational resources and implementation processes; community of practice from current and prospective implementation sites; and creation of performance metrics for central reporting. Conclusion: Preliminary results indicate that a framework-driven strategy enables implementation of a population-specific patient reported outcome measure. When implementation is complete, formal evaluation is planned and will determine the success of this approach.

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17 **Benefits of pathway concordance – a survival analysis of colon cancer patients in Ontario**

Presented By: **LUCIANO IERACI**, Senior Methodologist, Cancer Care Ontario

Purpose: Evidence-based treatment pathway maps (pathways) have been developed by CCO for several disease sites including colon cancer. Assessing concordance with recommended pathways requires comparing observed and "reference" treatment paths. This analysis examines colon cancer patients in Ontario and the relationship between pathway concordance and overall survival. Methods: Stage II and III colon cancer patients diagnosed in 2010 were followed for four years using administrative data. Two measurements of concordance were used: 1) a simple cumulative count of concordant events (CCCE) in the treatment pathway; and 2) a metric that compares observed and reference pathways and event sequences using a Levenshtein distance algorithm. The effect of pathway concordance on survival was assessed using the Aalen additive risk model, allowing us to capture the time-varying covariate effects in this relationship with a flexible, non-parametric approach. Results: CCCE showed a significant relationship between pathway concordance and survival only for Stage III patients. Levenshtein distance, however, showed a consistently strong effect on survival over time in both Stage II and III patients. The greater the distance between observed and reference pathways, the greater the risk of mortality – there is a clear benefit of pathway concordance on patient survival. Other significant covariate effects included an increase in mortality associated with age, tumour stage, emergency department visits, and surgical length-of-stay; and a decrease in mortality associated with neighbourhood income, screening status and number of chemotherapy visits. Conclusion: Pathway concordance is associated with survival in Stage II and III colon cancer patients. The Levenshtein metric is more sensitive to treatment pathway departures than a simple count of concordant events and is suitable for measuring the survival benefit of pathway concordance. Additional research is needed to evaluate and optimize our methods in the context of different patient outcomes and other cancer disease sites. Keywords: Survival analysis; Colon cancer; Clinical pathway concordance

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18 **A Population-Based Retrospective Study Exploring Predictors of Management Strategy in Metastatic Gastric Cancer Patients in Ontario**

Presented By: **YUNNI JEONG**, University of Toronto

Background: The majority of gastric cancer patients in North America present with incurable disease due to a paucity of specific symptomatology and low incidence precluding a mass screening program. Few evidence-based guidelines exist to direct the appropriate treatment strategy for metastatic patients. As a result, there is significant variation in the use of surgery, chemotherapy, and radiation. Understanding the predictors of treatment is necessary to assess the benefit of therapy and interventions for this population. Methods: A population-based, retrospective cohort study of patients diagnosed with metastatic gastric cancer between January 1, 2002 and December 31, 2014 was performed using administrative healthcare data. Follow-up was complete to June 30, 2015. Physician billing, hospitalization, and regional cancer centre data were used to measure receipt of surgical interventions, chemotherapy, and radiation. Management strategy was categorized as non-surgical (chemotherapy +/- radiotherapy), gastrectomy, and gastrectomy +/- chemotherapy or radiotherapy. Polytomous logistic regression using backward selection identified independent predictors of management strategy. Odds ratios (OR) and 95% confidence intervals (CI) were reported. Results: Preliminary findings include 1285 patients diagnosed between 2005 and 2008. Age, sex, comorbidities, tumour location, number of metastatic disease sites, bleeding, malnutrition, pain, region of residence, and receipt of care from a high volume oncologist all significantly predicted type of treatment strategy. Rurality of residence, income, number of symptoms, fatigue, and non-specific symptoms were not associated with therapeutic choice. Conclusions: This study will describe patterns of metastatic gastric cancer care in Ontario. Elucidation of receipt of treatment predictors will help identify gaps in access to care and causes of practice variation, which need to be addressed to provide more accessible and evidence-based patient care.

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19 **Estimating key parameter in periodic breast cancer screening**

Presented By: **HEDY JIANG**, Biostatistician, Cancer Care Ontario

Regular screening with mammography is widely recommended to reduce breast cancer mortality. However, whether breast screening does more harm than good has long been debated. Since a full evaluation of the effect on mortality could take 10-15 years in order to provide a reliable estimate of the eventual benefits and harms, it is unrealistic to expect each new modification of a screening technique to be evaluated in this way. Therefore, one needs to rapidly estimate suitable measures of the screening effect. In this paper, two measures of interest, the length of the pre-clinical state and the screening false negative rate, are discussed. A procedure is proposed to model the pre-clinical disease state duration, the false negative rate of the screening exam, and the underlying incidence rate in the screened population. We applied the model to data from the Ontario Breast Screening Program in Canada. Our results suggest that the mean preclinical duration is longer than 2 years. We also find only small marginal gains by screening every two instead of three years. The most important objective of a screening program should be to encourage first-time screening attendance.

21 **Metastatic castration resistant prostate cancer: Changes in prescribing patterns since abiraterone approval in Quebec in 2012**

Presented By: **HALIMA LAHCENE**, Student, University of Montreal

Introduction: Since 2004, docetaxel-based chemotherapy has been the cornerstone of the management of metastatic castration-resistant prostate cancer (mCRPC). In 2012, abiraterone became available through the RAMQ post-docetaxel setting. This study aimed to describe how real-world clinical practice was changed with the introduction of abiraterone in Quebec in 2012. Methods: We conducted a retrospective cohort study in two of McGill University's academic hospitals. We selected 308 patients treated for mCRPC from January 2010 to June 2014. Data on mCRPC treatments and patients' clinical and demographic characteristics was extracted. Descriptive statistics, Kaplan-Meier method and Cox proportional-hazard regression were used to describe drugs utilization over time, to estimate time to initiate them and to identify predictive factors of receiving them. Results: The median age at CRPC was 74.0. 52% of patients were diagnosed with mCRPC before 2012. Half of patients in the pre-2012 group had docetaxel and 1.2% had abiraterone as first-line vs 30% and 26%, respectively, in the post-2012 group. Overall, 84% of patients had docetaxel and 48% had abiraterone in the pre-2012 group versus 55% and 77%, respectively, in the post-2012 group. Patients with metastases at CRPC diagnosis: bone (HR: 2.4; 95%CI 1.4 – 4.1) and visceral (HR: 3.3; 95%CI 1.8 – 6.2), those younger than 80 at CRPC diagnosis (HR: 1.9; 95%CI 1.3 – 2.8) and those diagnosed with mCRPC pre-2012 (HR: 1.7; 95%CI 1.3 – 2.3) were more likely to have docetaxel. Patients with bone (HR: 1.9; 95%CI 1.1 – 3.2) and visceral metastases (HR: 2.4; 95%CI 1.3 – 4.7) at CRPC diagnosis and those diagnosed with mCRPC post-2012 (HR: 5.0; 95%CI 3.3 – 10.0) were more likely to have abiraterone. Median time to initiate docetaxel was delayed in post-2012 group comparatively to pre-2012 (11 (2 – 41) vs 5 (1-16) months, respectively). Conclusion: The introduction of abiraterone reduced docetaxel utilization as first-line and overall and delayed time to its initiation. Metastases extent, age, moment of diagnoses with mCRPC were predictive factors of receiving both treatments.

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22 **Continuous Improvement of the Cancer Care Ontario Drug Formulary Website**

Presented By: **NITA LAKHANI**, Pharmacist, Cancer Care Ontario

Background & Objectives: The Drug Formulary (DF) is the most accessed point on the CCO website, providing cancer drug information for both patients and health care providers. Users identified the need for improved site navigation and search functions, better organized content and support for mobile devices. Given its visibility and frequent access by external users, DF website redesign was prioritized among other CCO digital projects. Learning objectives included determining if website redesign would enhance the user experience and how continuous user feedback could inform future enhancements of the tool. Methods: A human-centric digital design approach (5D methodology) was used to develop the DF beta site, containing a subset of existing website content and allowing for productive user feedback. In the Discovery phase, DF pharmacists provided a "wish list" based on unmet user needs and participated in an exercise to map providers' use of the tool in practice. This information was augmented with user feedback from patients and other providers. The Define phase involved developing business and technical requirements to meet these needs. Rapid visualizations of the new site using wireframes were provided in the Design phase and users provided additional feedback. The project was brought to life in the Develop phase. Results: The DF beta site was Deployed in parallel with the existing site and usability testing with patients and providers was conducted post-implementation. Although users expressed that the beta site provided an improved experience, feedback suggests the need for further refinement of the tool. Key learnings include the need for more intuitive site navigation, improved filtering capabilities and formatting of content. Conclusions: The DF website was re-designed using a human-centric design approach and deployed as a beta site to allow for continuous improvement. Future iterations will incorporate findings from beta site usability testing and ongoing user feedback to enhance both patient and provider experiences.

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23 **Place of death as an Indicator for Cancer Care in Adolescents and Young Adults (AYA) in Canada**

Presented By: **CHARLENE RAE**, Research Co-ordinator, McMaster University

Objective: The goal of this study was to evaluate "Place of Death" as an indicator for the Canadian AYA cancer population. Approach: Palliation and symptom management has been identified as an area that needs to be addressed to improve care in AYAs with cancer. Although there are many quality indicators related to palliative care, obtaining age-specific national data is challenging with the exception of location of death. The "Place of Death" indicator was defined in this study as "The percentage of AYA (aged 15–39 years) cancer patients who die in hospital versus non-hospital locations between 2000 and 2012". Analyses were conducted using the Statistics Canada's Vital statistics – Death database 2000-2012. The percentage of AYA who died within hospital was calculated at both the national and provincial level. The indicator was assessed for change over time, and differences between both younger and older cancer populations. Results: Nationally the majority of AYA cancer-related deaths (2007-12), occurred in hospital, similar to children and older adults (0-14: 57%; 15-19: 71%; 20-29: 73%; 30-39: 73%; 40-49: 73%). There has been little change in place of death between 2000-04 and 2007-12, with the majority of patients still dying in hospital. There were no substantial differences in relative percent change between AYA and comparison age groups (-9.2% to -14.6%). The greatest observed decrease in hospital deaths occurred for children 0-14 years of age. Conclusions: The "Place of Death" indicator has many challenges including variability among the provinces in the coding of death location, and inability to determine patient preferences. Further exploration of end of life care and symptom management, is needed for AYA; as well as development of AYA-specific indicators and data sources to monitor and improve symptom management and end-of-life care in this population. Future work will focus on other indicators such as proportion of individuals dying in active vs palliative care units, and ICU/emergency room utilization prior to death.

Co-Authors: Charlene Rae, McMaster University; Chad Hammond, Canadian Hospice Palliative Care Association; David Szwajcer, Cancercare Manitoba; Ronald Barr, McMaster University

24 **Epidemiology of Adolescent and Young Adult Cancer in Canada: Incidence, prevalence, survival**

Presented By: **CHARLENE RAE**, Research Co-ordinator, McMaster University

Objective: To improve cancer care delivery and outcomes among adolescents and young adults (AYAs), we need high-quality, population-level cancer statistics for this age group. The goal of this study was to assess the current burden of cancer in AYAs in terms of incidence and prevalence, as well as report relative survival rates. Approach: For the purposes of this study, AYAs were defined as those diagnosed between 15 and 39 years of age. Age-standardized incidence rates (2009-13), 5-year relative survival ratios (2004-08), and 10-year point prevalence were calculated by age (15-29 & 30-39 years of age) and disease for Canada. Territories were excluded from all analyses. Quebec was not included for survival and prevalence analyses due to lack of data. Data were obtained from Statistics Canada's Canadian Cancer Registry and Canadian Vital Statistics, Death Database. Results: The age-standardized incidence rate of cancer in Canada is 37.8 per 100,000 for those aged 15-29 years, 104.7 per 100,000 for those aged 30-39 years, and 977.78 per 100,000 for those aged 40+ years. The most common cancers, accounting for more than 80% of new AYA cancer cases are thyroid cancer, breast cancer, Hodgkin lymphoma, non-Hodgkin lymphoma, testicular cancer and melanoma. The 5-year relative survival ratio for cancer overall was 86.3% for the 15–29 year age group and 83.4% for the 30–39 year age group. Survival was greater than 90% among 15-39 year olds for five diseases: thyroid, Hodgkin lymphoma, testis, melanoma and uterus. The overall prevalence of AYA cancer is 193.0 per 100,000 people among those diagnosed aged 15-29, and 564.7 per 100,000 among those diagnosed aged 30-39. Conclusions: The burden of AYA cancer may be relatively small in comparison to the adult population (40+ years of age), but the impact of better meeting their age-specific needs, is substantial from personal, societal and economic perspectives given their survival rates and many years of life expectancy.

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25 **Investment in Adolescent and Young Adult Cancer Research in Canada**

Presented By: **CHARLENE RAE**, Research Co-ordinator, McMaster University

Objective: To determine the proportion of cancer research investment in Canada relevant to adolescent and young adults (AYAs). **Approach:** Data was obtained from the Canadian Cancer Research Alliance's Canadian Cancer Research Survey (CCRS). Data included projects between 2005 and 2013 identified using 20 search terms. A total of 987 projects were identified. Three independent reviewers examined abstracts for the projects to determine relevance to AYAs. Projects were identified as either AYA-specific or AYA-included. AYA-specific cancer research studies focus on an AYA-specific topic (e.g., fertility) or restrict eligibility to the AYA age range (15–39 years). AYA-included cancer research studies include pediatric or adult subjects, with eligibility that includes the AYA age range (15–39 years). Proportion of investment was used to compare AYA research funding to overall investment, by disease and type of research. **Results:** Approximately 4% of new cases of cancer diagnosed each year in Canada are in AYAs (aged 15–39 years), but the average annual investment in AYA-specific cancer research between 2005 and 2013 was \$1.8 million, or only 0.4% of total cancer research investments in Canada. Research that included AYAs but was not AYA-specific averaged \$12.1 million per year, representing 2.2% of average annual cancer research investment. Over 80% of research funding for AYA-specific studies between 2005 and 2013 was for three disease groups: sarcomas, breast cancer, and germ cell tumours (testis and ovary). AYA-specific research funding was lacking in other disease groups that have high age-specific mortality, including leukemia, central nervous system tumours, colorectal cancer, melanoma and female genital tract cancers. In 2013, the most frequently funded types of AYA-specific research were cancer control, survivorship and outcomes research. **Conclusions:** AYAs are significantly under-represented when it comes to cancer research funding in Canada. Increased awareness of the unique aspects of both the biology of AYA cancers and the AYA cancer journey has focused attention on the inequity regarding funding for AYA cancer research. More research is urgently needed to improve outcomes for this at-risk population.

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26 **Patterns of avoidable vs. unavoidable hospitalizations among cancer patients**

Presented By: **SALLY LAU**, Resident, BC Cancer Agency

Background: Hospitalizations can be distressing to patients and costly to the healthcare system. Prior research in the non-oncology setting indicates that up to 50% of hospitalizations are potentially avoidable. Our aims were to characterize the patterns of hospitalizations in cancer patients within an universal healthcare system and describe factors associated with potentially avoidable admissions. **Methods:** We reviewed all patients admitted to the British Columbia Cancer Agency over an 18-month period. Pre-planned hospitalizations for inpatient administration of systemic therapy were excluded. Eligible hospitalizations were reviewed for potentially avoidable admissions based on a pre-defined definition with discrepancies resolved through a consensus of clinicians. **Results:** There were 701 hospitalizations, of which 350 admissions were eligible for review. Among them, 286 (82%) and 64 (18%) were unavoidable and potentially avoidable, respectively. Comparing between unavoidable and avoidable groups, median ages at admission were 64 and 63 years, 48% and 45% were men, 67% and 66% were receiving palliative therapy, median duration of stay were 5 and 7 days, respectively (all $p > 0.05$). Patients with potentially avoidable hospitalizations were more likely to have a solid tumor (92% vs. 76%, p). **Conclusion:** Potentially avoidable hospitalizations occur in cancer patients and may represent a significant source of stress for patients and the healthcare system.

Co-Authors: Sally Lau, BC Cancer Agency; Winson Cheung, Cancer Control Alberta; Steven Bae, Queen's University

27 **Advancing the Quality of and Access to Health Services in Ontario Using Funding Agreements: CCO's Contract Management Program**

Presented By: **JEN TIN**, Coordinator, Contract Management & Diagnostic Assessment Programs, Cancer Care Ontario

Objective: Working collaboratively with clinical and administrative stakeholders, CCO's Contract Management (CM) program drives improvements in the quality of and access to cancer and renal services in Ontario, by effectively managing the allocation of funding to healthcare organizations, facilitating quality and access improvements, and ensuring fiscal responsibility and accountability. **Approach:** The CM program develops funding agreements with healthcare organizations across Ontario. Agreements are informed by clinical and administrative input from CCO and external stakeholders. The contracts process includes four stages: i) identification of system needs and key deliverables to be addressed/achieved, ii) allocation of funding to facilities, iii) in-year amendments in response to system demands, and iv) reconciliation of funding through the recovery/allocation of additional funding in response to whether contractual requirements are met or exceeded. Performance is monitored throughout the process. **Results:** In 2015/16, \$1.4B was allocated for health service volumes and quality initiatives through a total of 525 agreements across 22 program areas. Between 2011/12 and 2015/16, the Cancer Surgery Agreement improved access by facilitating a 9% increase in the percentage of priority 2-4 cases that received surgery within their targets. In 2015/16, 11 of the 14 regions advanced their quality of care in pathology and laboratory medicine by achieving the stakeholder engagement targets established in the Integrated Cancer Program Agreement. In-year amendments enable timely responsiveness to system demands, as demonstrated by the \$10.3M of additional funding allocated in 2015/16 in response to stem cell transplant resource constraints. Further, the CM process has consistently ensured financial and operational accountability through year-end reconciliations. **Conclusions:** Contractual agreements are effective instruments in driving the performance and quality of the healthcare system. The CM process promotes standardization and efficiencies across the healthcare system, while maintaining flexibility and adaptability, as demonstrated by the range of programs supported. Future directions for Contract Management include expansion into Palliative Care.

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28 **A population-based study of patient and system factors associated with advanced cutaneous melanoma in Ontario**

Presented By: **MEAGHAN MAVOR**, Master's Student, Queen's University

Background: International studies have observed inequitable access to timely diagnosis of melanoma. As this has not been sufficiently investigated in Canada, we undertook a population-based study of melanoma in Ontario investigating the relationship between advanced melanoma and patient and health system factors unrelated to melanoma biology. Methods: A 65% random sample of all invasive cutaneous melanoma in Ontario from 2007 to 2012 was identified in the Ontario Cancer Registry (OCR), and pathology reports on these cases were obtained. Reports were abstracted according to a standardized algorithm and linked to OCR. The data from each patient's first melanoma diagnosis was utilized. Associations between advanced melanoma (thickness >2.0mm) and patient-, health system-, and tumor- factors were described. The Rurality Index of Ontario categorized rurality, and the Ontario Marginalization Index, socioeconomic status (SES). Multivariable modified Poisson regression was utilized. Results: 9085 people were identified, of which 8128 had thickness information. 46.72% of patients were female and the median age at diagnosis was 62. 25.70% of patients had advanced melanoma (>2.0mm). In unadjusted analyses, males were 1.38 times more likely than females to be diagnosed with advanced melanoma (95% CI: 1.28-1.49); patients living in a rural setting were not more likely to be diagnosed with advanced melanoma (RR:0.96; 95% CI:0.88-1.04); those of the lowest SES quintile were at the greatest risk of advanced melanoma (RR: 1.54; 95% CI:1.36-1.74); and, advanced melanoma risk varied by health region (RR range: 0.73-1.10, p=0.0011). In multivariate regression, advanced age (RR: 1.01 per year, 95% CI:1.008-1.0127), male sex (RR:1.12, 95% CI:1.05-1.19), lowest SES quintile (RR:1.26 vs. highest quintile, 95% CI:1.13-1.40), and health region (RR range: 0.93-1.35, p=0.0045) were significantly associated with advanced melanoma. Conclusions: Disparate rates of advanced melanoma between the sexes, and by age, SES and health region, suggests there may be inequitable access to timely diagnosis of melanoma in Ontario. This highlights a potential opportunity for system improvement to ensure timely and equitable access to care for melanoma in this large population.

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29 **Variable Participation of Knowledge Users in Cancer Health Services Research**

Presented By: **MARY ANN O'BRIEN**, Assistant Professor, University of Toronto

Background: Integrated knowledge translation (iKT) is a research approach in which knowledge users (KUs) co-produce research. KUs are individuals who are likely to use the products of research to make decisions about health policy, programs or practices. The rationale for iKT is that it will lead to research that is more relevant and useful to KUs, thereby accelerating uptake of findings. The aim of the current study was to evaluate the impact of iKT activities within a cancer health services research program. Methods: An embedded multiple case study design was employed. The cases were 5 individual studies within an overarching cancer research program. Studies addressed one of the following topics: pain management, colorectal cancer screening, economic analysis, policy analysis, and long-term effects of cancer treatment. We conducted document reviews and held semi-structured interviews with Principal Investigators (PIs), KUs, and other stakeholders. During the analysis, we examined patterns across and within cases. Findings: Twenty-four participants (5 studies) were approached; 18 individuals (4 studies) were interviewed. Document reviews found evidence of planned iKT strategies in all cases; however, actual KU role and/or their level of engagement on research teams were variable. As there were mismatched expectations between PIs and KUs regarding their role, participants recommended that expectations be made explicit from the beginning of the collaboration. KUs perceived that frequent KU turnover may have impacted both the level of KU engagement and the uptake of study results. Conclusions: Significant barriers to KU engagement in the co-production of cancer health services research include mismatched expectations and frequent turnover. Research teams may need to consider strategies to address barriers to iKT such as explicit discussion of KU roles and plans for KU turnover. Strengthening iKT strategies within cancer health services research teams may lead to improved uptake of evidence-based policies and practices.

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30 **Reliability of Administrative Data for Evaluating Quality of Systemic Cancer Treatment**

Presented By: **MELANIE POWIS**, Research Associate, Princess Margaret Cancer Centre - University Health Network

Background: There is ongoing interest in leveraging administrative data to examine quality but methodological concerns persist. We evaluated the reliability of a previously established panel of administrative data derived quality measures for systemic cancer treatment. Methods: The study cohort consisted of women diagnosed with early stage (stage I-III) breast cancer (ESBC) in Ontario, Canada, in 2010. Performance on 11 quality indicators evaluated using deterministically linked healthcare administrative databases has been reported previously. The sensitivity and specificity of these 11 indicators were examined using the chart as the gold standard. Results: The administrative cohort consisted of 6,795 women with ESBC from which a validation cohort of 705 patients was randomly selected from among patients who underwent cancer surgery at one of five hospitals chosen to balance feasibility and institutional characteristics. Sensitivity (SN) and specificity (SP) varied by indicator; reliability was highest for receipt of systemic therapy (SN 100%, SP 98%) and timely receipt of systemic therapy (SN 96%, SP 97%). Indicators found to have good sensitivity and moderate specificity included receipt of surveillance imaging (SN 98%, SP 83%), receipt of hormonal therapy (SN 98%, SP 78%) and the use of computerized physician order entry for ordering systemic therapy (SN 100%, SP 77%). Reliability of some indicators may have been affected by suboptimal chart documentation in instances where care spanned multiple settings (consultation with a medical oncologist; SN 98%, SP 33%) or the medical record was fragmented (receipt of appropriate molecular testing; SN 98%, SP 67%). Reliability was low for indicators with a small number of eligible patients, such as receipt of appropriate anti-emetics (SN 93%; SP 55%) inappropriate receipt of hormonal therapy (SN 50%; SP 100%), adherence to hormonal therapy (SN 91%, SP 40%), and inappropriate trastuzumab (SN 0%; SP 95%). Conclusion: Administrative data can be used to evaluate quality of systemic cancer therapy but understanding the reliability characteristics of individual indicators is essential to inform their appropriate use and interpretation.

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31 **Equity in cancer care: An analysis of the Ontario Cancer Plan, and its implications for health equity**

Presented By: **AMBREEN SAYANI**, PhD Candidate, York University

The Ontario Cancer Plan (OCP) IV (2015 to 2019) is a strategic document that defines provincial priorities in cancer care and allocates resources accordingly. We conducted a directed content analysis of the OCP IV equity goal using the analytical framework provided by the "synergies of oppression" intersectional lens. We developed a framework of inquiry adapted from Taplin et al's definitions of personal and population-level success across the cancer care continuum. In our analysis, we found that the equity goal was primarily in relation to access-to-care. Interventions were aimed at improving access to cancer services for high-risk priority populations, and included provider cultural training, psychosocial care, and enhanced geographic proximity. However, cancer risk, outcomes and mortality are highly influenced by social location, such that the socially disadvantaged are more likely to endure poorer cancer-related outcomes. Given that socioeconomic inequalities are steadily increasing within Ontario, the OCP equity goal appears disconnected to the realities of the living and working conditions of those experiencing cancer within the province. The OCP elaborates the shifting nature of cancer care delivery from in-hospital to at-home; however, it fails to build into this realisation the constraints and challenges that individuals may subsequently face. A clear lack of policy recommendations that would enhance biological outcomes for all cancer patients such as a provincial cancer drug plan, or cancer sick leave and cancer-disability financial entitlements can have a counter productive effect of increasing the health divide between advantaged and disadvantaged cancer patients. Conclusion: As a strategic document, the OCP IV sets a clearly defined equity goal. However, it also limits the interpretation of equity in "health" to an issue of equity in "access to health". Health inequities across the cancer care continuum are directly linked to increasing socioeconomic inequities. No declarative statements are made in the OCP that acknowledge the link between social and health equity. And no upstream policy recommendations are suggested to improve the living and working conditions of those experiencing cancer.

Co-Authors: Ambreen Sayani, York University; Tamara Daly, York University

32 **Socio-demographic correlates of PAP tests for cervical cancer screening in Calgary, Alberta**

Presented By: **SAYEEDA AMBER SAYED**, Graduate Student, University of Calgary

Background: Pap testing has reduced the incidence and mortality rates of cervical cancer. However, the benefits appear to be distributed unevenly since 30% of eligible women have not been screened during the preceding three years in Alberta. Women who have never been screened or are screened irregularly are most at risk for cervical cancer. The aim of this study was to understand who gets testing and who does not, in Calgary, Alberta. We therefore analyzed the sociodemographic characteristics of women undergoing Pap tests in Calgary, AB in 2011. Methods: Pap testing information of women aged 25-69 were obtained from Calgary Laboratory Services for the year 2011. Screening rates were determined for specific age groups, and socio-demographic factors such as median household income and ethnicity were inferred from Census Canada data of 2011. Negative binomial regression and generalized estimating equations were used to test associations of cervical screening rate with socio-demographic variables for all women. Results: Pap test rate in the recommended age group for the 2011 year varied from 40.6 % to 23.6 %. For all ages between 25 and 54, Pap test screening rates are above 33%, which implies that many women are having tests more than once every three years. There is a significant age and geographical variation in screening rates in Calgary, AB. Use is positively associated with median household income, education, Chinese Ethnicity and negatively associated with 'Black' visible minority status. Women living in North-east quadrant of Calgary; an area with large number of immigrant population are also not getting screened. Interpretation: Screening programs need to be strengthened with a more intense focus on including specific demographic groups and reducing overuse. Understanding current testing patterns is important in assessing the benefit to harm ratio of Pap testing and for monitoring effect. This should be considered by physicians, patient advocacy groups and policy makers when examining the utility of the Pap test as a screening tool.

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33 **How does early palliative care affect services used and places of care in the last two weeks of life?**

Presented By: **HSIEN SEOW**, Associate Professor / Canada Research Chair in Palliative Care and Health System Innovation, McMaster University

Objective: Much end-of-life care research focuses on location of death (e.g. hospital or home), but little on place of care prior to death. This study examines how receiving palliative care services either early, late, or not at all is associated with place of care and services used in the last two weeks of life. Methods: Using linked administrative databases, we examined a population-based cohort of cancer decedents in Ontario from FY2011/12 to 2012/13. Using validated billing codes for any palliative care services across a comprehensive list of settings and providers, we categorized if decedents received palliative care early (>14 days before death), late. Results: We identified 75,657 cancer decedents. 76% received palliative care services early, 12% late, and 12% none at all. Early palliative care services consisted of homecare services, physician home visit, outpatient visit, or inpatient admission with palliative care intent. Late palliative care services primarily consisted of a palliative care hospitalization. In the last 2 weeks of life, those with early palliative care had a steady 48% using the hospital (10% inpatient bed; 38% palliative care hospitalization). Those with no palliative care had an increase from 21% to 50% in an inpatient bed across the two week period. The homecare use between these two groups also differs from a maximum of 5% (none) to 19% (early) in the last 2 weeks. We have planned a regression analysis to control for covariates. Conclusion: Our analysis seems to suggest that receiving early palliative care services (e.g. homecare) seems to greatly increase the likelihood of being cared for at home and dying at home or in a palliative care hospital bed.

Co-Authors: Hsien Seow, McMaster University; Peter Tanuseputro, University of Ottawa

34 **Validity testing of the AGREE-HS, a health systems guidance quality appraisal tool**

Presented By: **KAREN SPITHOFF**, Research Manager, McMaster University

Objectives: Health systems guidance (HSG) provides recommendations about health services delivery, governance arrangements and financial arrangements. The use of poor quality HSG to inform cancer system-level decision-making may result in the adoption of services and arrangements that are contextually inappropriate or ineffective. Our team has developed a new tool to assess the quality of HSG: the AGREE-Health Systems (AGREE-HS). Our objective was to investigate the face validity of the AGREE-HS to appraise HSG quality. Approach: Health systems researchers, administrators and policy-makers were invited to review the draft 5-item AGREE-HS tool and provide feedback about its content and structure using an online survey, comprising both scaled (7-point Likert scale) and open-ended questions. Descriptive statistical methods (frequency, mean, standard deviation) were used to analyze scaled responses and written comments were reviewed by the AGREE-HS research team. Results: Thirty individuals representing all six WHO geographical regions reviewed the draft AGREE-HS and completed the survey. Overall, responses indicated that the content and structure of the AGREE-HS tool were appropriate for appraising the quality of HSG. Ninety percent of respondents indicated that the AGREE-HS would be useful for appraising the quality of HSG and 73% indicated that it would be useful for assisting in the development of HSG. Overall, respondents agreed that the instructions were clear (mean 5.67/7) and they felt confident about applying the tool (mean 5.43/7). Key feedback included the need for additional examples and more guidance on the interpretation of the appraisal results. Conclusion: Study results support the use of the AGREE-HS for appraising the methodological quality of HSG, as well as assisting in the development of high quality HSG. The addition of further examples and guidance will improve the tool's usability. The research team will use the modified tool to appraise the quality of recent global, regional and national cancer HSG to identify key areas for improvement in HSG quality; the appraisal will serve as a baseline upon which to measure HSG improvement after the dissemination and adoption of the AGREE-HS.

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35 **Colonoscopy Quality Management Program 2016 Annual Report – Supporting High-Quality Colonoscopy Care in Ontario**

Presented By: **DAN STRUMPF**, Lead, Analytics Quality Management Partnership, Cancer Care Ontario

Background: The Quality Management Partnership (QMP) brings together Cancer Care Ontario (CCO) and the College of Physicians and Surgeons of Ontario to ensure consistent, high-quality care for Ontarians via Quality Management Programs (QMPs) in three health service areas: colonoscopy, mammography and pathology. The Partnership distributed its first annual (fall 2016) Colonoscopy QMP reports to initiate discussions about quality improvement opportunities, to build awareness of performance targets and to serve as an engagement tool. **Methods:** The Colonoscopy QMP Expert Advisory Panel (EAP) recommended standards, indicators and targets based on Program in Evidence-Based Care Colonoscopy Quality Standards. The Colonoscopy QMP distributed a survey for compliance with 15 EAP-recommended provincial colonoscopy standards to 168 facilities across Ontario. In addition, the Colonoscopy QMP utilized health administrative databases available to CCO to report on eight colonoscopy performance and three wait-times indicators. User-centred and user-interface design methodologies were employed in report design, including the iterative development of prototypes with project stakeholders and semi-structured interviews with users. **Results:** The 2016 colonoscopy QMP report was provided in three formats: provincial, regional, and facility level, each reporting data on current state performance aggregated to the relevant level. The reports were disseminated to administrative and clinical leadership at each level. The report was designed to provide recipients with a current overview of quality measured by specific standards and indicators in an easily accessible format, including numeric data and graphics. These reports provided a unique and valid source of information on the variation in colonoscopy care across Ontario, highlighting opportunities for improvement. An assessment of baseline colonoscopy performance in Ontario will be provided as well as current and future engagement activities to facilitate utilization of the reports to drive quality improvement. **Conclusions:** Colonoscopy QMP reports show that the quality of colonoscopy care in Ontario is high, but variation exists highlighting potential opportunities for improvement. The purpose of sharing these reports broadly is to facilitate local dialogue about quality as a means to improve care for patients.

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36 **Developing the Breast Utility Instrument - Psychometric (BUI-P): A Multiattribute Health Status Classification System**

Presented By: **TERESA TSUI**, PhD student, Toronto Health Economics and Technology Assessment Collaborative

Background: Breast cancer (BC) is the most common cancer amongst women. Women's values and preferences for outcomes in BC are critical for optimal treatment choice. Utility is a quantitative measure of patient preferences. Current health-related quality of life (HRQoL) instruments are either BC-specific but not preference-based, or generic preference-based measures. The Breast Utility Instrument (BUI) addresses this gap. Its multi-attribute health status utility classification system will be a BC-specific psychometric instrument (BUI-P) and forms the core of a BC-specific utility instrument. **Objectives:** 1. Perform a systematic review and construct an algorithm focused on classical and item response theory approaches used in the development of condition-specific preference-based instruments. 2. Generate and reduce items for a novel breast-cancer multi-attribute system. 3. Determine the domain structure, reduce items, and determine item levels. **Methods:** A systematic review will identify current best practices of applying classical and modern measurement theory in the creation of a novel condition-specific preference-based instrument. A literature review of existing BC psychometric instruments will create a conceptual framework and identify salient HRQoL questionnaire items in BC. Focus groups with patients from all BC stages, BC survivors, and clinicians from two breast oncology centres (Toronto and Hamilton) will generate and reduce items. Patient responses on the initial items will be analyzed using principal component analysis to determine the instrument's domain structure. Item response theory will reduce items per domain and their levels. **Significance:** The BUI-P can be used on its own to evaluate HRQoL in BC. It also serves as an initial step in the development of a first-of-its-kind preference-based instrument in BC, the BUI. The BUI-P will be created using an innovative approach combining classical and item response theory. The BUI will allow researchers, clinicians, and policymakers to bring preferences of patients with BC into clinical and policy decisions.

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37 **Baseline Characteristics as Predictors of Adjuvant Chemotherapy (AC) Toxicities in Stage III Colorectal Cancer (CRC) Patients**

Presented By: **WINSON CHEUNG**, Provincial Director of Health Services Research, Cancer Control Alberta

Objective: Toxicities can drive patients to decline chemotherapy or poorly adhere to treatment. We aimed to determine the associations between baseline characteristics such as age, sex, ECOG performance status, tumor location, and comorbidities with common toxicity outcomes acquired from adjuvant chemotherapy (AC). Methods: We reviewed a cohort of 371 colorectal cancer (CRC) patients treated with adjuvant monotherapy (Capecitabine) or combination therapy (FOLFOX or CAPOX) within 12 weeks of curative resection at the British Columbia Cancer Agency, and determined the associations between baseline characteristics and toxicity outcomes. Results: Among 371 patients, median age was 65 years, 52% were men, and 14% were ECOG >2. In this cohort, 41% received monotherapy and 59% received combination therapy. For monotherapy, univariate analyses found that age, sex, ECOG, and pre-treatment anemia were associated with hematological toxicities and tumor location was associated with gastrointestinal (GI) toxicities ($P > .70$) (OR 3.30, 95% CI 1.17-9.37, $P = 0.025$) and pre-treatment anemia (OR 23.18, 95% CI 6.36-84.48, $P = 0.000$), while GI toxicities were less likely to occur with a tumour site at or after the splenic flexure (OR 0.38, 95% CI 0.15-0.99, $P = 0.047$). In univariate analyses of combination therapy, sex and pre-treatment anemia were associated with hematological toxicities, while cardiac and/or respiratory comorbidities were associated with neuropathy ($P = 0.000$) and neuropathy was less likely to develop with cardiac and/or respiratory comorbidities (OR 0.23, 95% CI 0.07-0.81, $P = 0.023$). Conclusions: Specific baseline characteristics are associated with the development of certain side effects. This information can be used to further inform AC discussions with patients and caregivers who are unclear about the benefits and risks of treatment.

Co-Authors: Akie Watanabe, University of British Columbia; Charlie Yang, BC Cancer Agency; Winson Cheung, Cancer Control Alberta

38 **An examination of relationships between colonoscopy resource availability and quality and the colorectal cancer diagnostic interval in Ontario, Canada**

Presented By: **COLLEEN WEBBER**, PhD Candidate, Queen's University

Background: The availability and quality of colonoscopy resources may be an important and as yet unexplored determinant of the CRC diagnostic interval, defined as the time from patients' first presentation to the healthcare system to their final diagnosis. The purpose of this study was to evaluate the relationship between the CRC diagnostic interval and colonoscopy resource availability and quality. Methods: This was a population-based, cross-sectional study using administrative data from the Institute for Clinical Evaluative Sciences. The study population was CRC patients diagnosed in Ontario, Canada between 2009 and 2012. The diagnostic interval, defined as the time from the first cancer-related healthcare encounter to the date of diagnosis, was measured using control charts to identify the earliest CRC-related encounter and the cancer diagnosis date from the Ontario Cancer Registry. Exposures of interest included five area-level measures of colonoscopy resources that described resource availability (colonoscopist density, private clinic access, and distance to colonoscopist) or quality (colonoscopy completion rate, access to gastroenterologists). Relationships between the diagnostic interval and each measure of colonoscopy resources were evaluated using multivariable quantile regression. Results: 23,941 CRC patients were included in the final cohort. The median diagnostic interval was 84 days and the 90th percentile was 323 days. We observed statistically significant associations between the diagnostic interval, evaluated at both the median and 90th percentile, and the availability and quality of colonoscopy resources. Specifically, patients residing in areas with lower colonoscopist density, colonoscopy completion rates or private clinic access or higher access to gastroenterologists had longer diagnostic intervals, with adjusted differences of over one month at the median and 2.5 months at the 90th percentile. Conclusion: This study highlights the long wait times that patients may face when being diagnosed with CRC. Reduced availability and quality of colonoscopy resources is associated with longer diagnostic intervals. Health care providers, planners and policy makers can use these results to inform their efforts to promote the timely diagnosis of CRC.

Co-Authors: Colleen Webber, Queen's University; Patti Groome, Queen's University; Jennifer Flemming, Queen's University; Richard Birtwhistle, Queen's University; Mark Rosenberg, Queen's University

39 **Radiologist one-year recall recommendation rate after a normal breast screen: Implementing provider practice change by performance monitoring and intervention**

Presented By: **KENNY WONG**, Senior Analyst, Cancer Care Ontario

Background: The Ontario Breast Screening Program is an organized screening program that recommends biennial mammographic screening for women age 50-74 at average-risk for breast cancer. Some women are screened at a one-year interval due to breast density, family history, high-risk lesions at prior biopsy or client /referring physician request. Screening radiologists may also recall women with a normal screen in one-year, based on findings which are considered benign, but challenging. Participating radiologists receive a performance report annually. The radiologist directed one-year recall rate (RDOYR) is included as an indicator. To promote appropriate screening, the program implemented a directive to monitor and reduce the RDOYR. The objective of this study is to demonstrate how indicator monitoring can be used to assess interventions to change provider practice, specifically to reduce RDOYR. Methods: Data was extracted from the provincial database for screening mammograms between 2011-2015. The RDOYR was calculated by counting the number of normal breast screens with a radiologist recommended one-year recall, out of the total number of normal breast screens. The RDOYR was initially provided to radiologists in 2011. Radiologists who were considered outliers were provided guidance on the importance of biennial screening and limitations of screening via discussion in 2012 and through verbal and written correspondence in 2013. In 2014, radiologists were required to provide the reason for a one-year recall on their reports; outliers were targeted as in 2013. Results: For each year, the total number of screens and RDOYR were: 2011 (440,412 screens, 9.6%), 2012 (466,618 screens, 9.4%), 2013 (472,891 screens, 6.1%), 2014 (513,184 screens, 3.0 %), 2015 (526,293 screens, 1.5%); a significant decrease in RDOYR was observed. Conclusions: Monitoring the RDOYR provincially was effective in managing strategies to facilitate provider practice change. Provider data dissemination, knowledge translation and reporting changes were valuable strategies to influence practice change.

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40 **Building consensus: Using modified Delphi methodology to prioritize strategies for improving patient access to chemotherapy-related toxicity management in Ontario**

Presented By: **JANE YAO**, Senior Specialist, Policy, Cancer Care Ontario

Background: Patients receiving chemotherapy may experience treatment-related toxicities, which require effective and timely management. In Ontario, almost half of all breast and colon cancer and over 50% of lymphoma patients visit the emergency department at least once within four weeks of receiving chemotherapy. To improve patient access to toxicity management (TM) support, a provincial cancer agency identified potential strategies for prioritization as part of a province-wide quality improvement (QI) initiative. Methods: A modified Delphi approach was used to seek consensus among 97 patients, oncologists, nurses, pharmacists and administrators from Ontario. Three rounds of anonymized electronic voting on access strategies took place, once before and twice during an all-day Symposium in early 2016. Strategies for prioritization were identified by a provincial survey. In the initial rounds, participants evaluated seven interventions based on effectiveness (e), feasibility (f) and sustainability (s). In the last round, participants ranked interventions on a 5-point Likert scale. In-person discussion followed each voting. Central tendency was analyzed per evaluation criterion and in aggregate ($x = e + (f + s)/2$). Strategies with votes fewer than the mean effectiveness and feasibility-sustainability composite scores were eliminated from subsequent voting. Results: Throughout the voting rounds (n = 97, 91, 63), facility-level access strategies were considered more effective, feasible and sustainable than interventions administered at the regional or provincial levels. Of the shortlisted strategies, 80% were facility-led approaches. Consensus on models for implementation emerged around providing urgent care space (mean $x = 3.1$), telephone triage (mean $x = 3.0$) and proactive call-back (mean $x = 3.0$). Regional or provincial telephone triage and electronic interventions scored below the means and were eliminated. Conclusion: The provincial consensus-building exercise prioritized three potential interventions to improve patients' access to TM support. This approach showcases the value of formulating a system-level implementation strategy attuned to both regional variations and patient needs. Informed by these insights, a province-wide QI initiative incorporating the preferred access strategies is underway. Evaluation of the initiative will inform impact, scale-up and sustainability.

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42 **Colorectal cancer treatment disparities for individuals with a severe psychiatric illness**

Presented By: **ALYSON MAHAR**, Postdoctoral Research Associate, Sunnybrook Research Institute

Background: There is consistent evidence of cancer care disparities for vulnerable populations within universal healthcare systems. These inequalities occur as the cumulative sum of social vulnerability, stigma, healthcare access issues, a lack of patient-centered care, and the social and economic context of healthcare delivery. Individuals with a severe psychiatric illness (SPI) are potentially at an increased risk for worse cancer outcomes through a number of these pathways. Methods: The associations between an SPI and cancer treatment were investigated in a cohort of colorectal cancer (CRC) patients diagnosed in Ontario between 01/04/2007 and 31/12/2012 using provincially routinely collected linked healthcare data. An SPI history was determined using hospitalization, emergency department, and psychiatrist visit data, with diagnoses of schizophrenia, schizoaffective disorders, other psychotic disorders, bipolar disorders or major depressive disorders. An SPI was categorized as 'no history of mental illness, 'outpatient SPI history', and 'inpatient SPI history'. Cancer outcomes were measured using physician billing and regional cancer centre data. Multiple log-binomial, logistic, and modified Poisson regression were used. Results: CRC patients with an SPI were less likely to have consultations with oncologists (surgeons, medical oncologists, radiation oncologists) than those with no history of mental illness. Individuals with an SPI history had less provision of primary, adjuvant, and palliative treatment. Stage II and III CRC patients with an inpatient SPI history were 2.15 times more likely (95% CI 1.07-4.33) to not receive potentially curative surgical resection, and 2.07 times more likely (95% CI 1.72-2.50) to not receive adjuvant radiation or chemotherapy. Similar, but attenuated risks for patients with an outpatient SPI history were documented. Conclusions: Individuals with an SPI are among the most vulnerable patients in the cancer system. Inequalities in colorectal cancer treatment existed at almost all points of care for individuals with an SPI history. Lower rates of guideline recommended treatment may contribute to worse prognosis. Further action to understand and improve cancer outcomes for individuals with an SPI within the Ontario cancer system is necessary.

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43 **Surgical practice patterns and outcomes of gastric cancer resection for gastric cancer in Ontario: A province-wide study using chart review and health services utilization data**

Presented By: **ALYSON MAHAR**, Postdoctoral Research Associate, Sunnybrook Research Institute

Background: Gastrectomy with negative resection margins and adequate lymph node dissection is the cornerstone of curative gastric cancer (GC) treatment. However, gastrectomy is a complex and invasive operation with significant morbidity, and mortality; long-term success is highly dependent on the experience and operative volume of the surgeon. These operations may also be costly, given the potential for long recovery and lengthy operating times. Little is known about surgical practice patterns and both short and long-term outcomes for early stage gastric cancer in Ontario. Methods: A population-based, retrospective chart review was performed on a cohort of GC patients diagnosed between 01/04/2005-31/03/2008, with follow-up to 31/03/2012. Chart review data provided clinical details such as disease stage and primary tumour location, as well as information on the surgical approach (laparoscopic vs open), the extent of surgery (sub-total, total, multivisceral resection), the number of lymph nodes examined, operating time, and the status of surgical resection margins (positive or negative). Health services utilization data provided patient demographic information (sex, age), physician information (e.g. years of practice), information on region of residence (Local Health Integration Network) to study geographic variation, hospital length of stay, costs, as well as vital status. The perspective of the health care system and a two year time frame was taken to describe costs. Costs were reported in 2016 CAN dollars. Multivariable logistic regression and Cox-proportional hazards regression were used to evaluate associations. Results: T1n preparation. Conclusion: This is the largest surgical cohort of gastric cancer patients in a low incidence country to date, providing important information on curative treatment outcomes and costs. Identifying the impact of patient, tumour, and physician, and system factors on surgical outcomes will generate ideas toward developing interventions aimed at improving GC operative efficiencies and outcomes within the cancer system.

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44 **Experience Design in Health Care: The Chemotherapy Medication Process from a Pharmacist's Perspective**

Presented By: **JULIE BUELOW**, Communications Advisor, Cancer Care Ontario

Background & Objectives: The chemotherapy medication process includes the prescribing, verification, drug preparation, dispensing and administration of cancer drugs. Health care professionals work together during this process to provide optimal person-centered care. When designing technology such as a drug information website to support this process, it can be difficult to know where to focus design efforts and resources to improve health systems. It is also challenging to translate specific clinical knowledge into technical requirements. To solve this problem, an empathetic understanding of health system users may increase positive design outcomes. Experience mapping is a method which provides a shared reference for system designers and developers by producing a one page visual reference, illustrating both positive and negative aspects of the current system. The map also captures the emotions that users may experience, thereby enabling designers and other health care professionals to become aware of feelings that would have otherwise been hidden. Such a map can inform future design elements and quality improvement initiatives. **Methods & Results:** In this particular case study, oncology pharmacists participated in an experience mapping exercise detailing what they do, think, and feel during each stage of the chemotherapy medication process. The result was a surprising discovery of the breadth and depth that ambulatory oncology pharmacists are involved with during all stages of the process. The map also illustrates emotional triggers that contribute to the empathetic understanding of the role that an oncology pharmacist plays. **Next Steps:** In terms of knowledge translation, the completed experience map may be disseminated among other health care professionals, administrative leadership as well as system designers to facilitate discussion and understanding of the chemotherapy medication process and how it can be improved. In addition, if the roles of other health care professionals are mapped, by contrasting and comparing the experience maps, further efficiencies, common pain points, and shared positive interactions could be discovered with the ultimate goal of health system improvement.

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45 **A Database Management Solution for Clinical Cancer Care Research**

Presented By: **AL ARTAMAN**, Epidemiology Director, CancerCare Manitoba

Introduction: Data collection and information exchange are key parts of day-to-day clinical operations. Although electronic health record systems can make this process relatively quick and easy, fields containing free-form text present numerous challenges for extracting meaningful data for research and auditing purposes. This results in tremendous lost opportunity for clinical translational research. Here, we describe a solution that has been implemented at CancerCare Manitoba to overcome these limitations. **Methods & Results:** Caisis is a freeware that has been widely adopted to integrate research-specific data collection with clinical practice workflows. It is currently used to manage data for 43 institutions for a variety of diseases. Caisis provides a safe and secure environment for researchers to audit and refine clinical information for research purposes. However, adoption of Caisis into our existing platforms required customization. A major challenge at the outset with Caisis was proper documentation. The Wiki information was several versions old, which limited its direct applicability. The solution was to create customized documentation, both in-code and in the form of draft manuals (one user oriented, and one technical). This reduced the burden of continued maintenance and training for application development. Another challenge of customizing Caisis arose from data structure. In the existing platforms, data tables are linked to patients rather than to specific diseases, and therefore a single patient could be shared and viewed within multiple, unrelated studies. The solution was to restructure the link of each line-level records to a disease site, which corresponds to a particular research study. **Conclusions:** A future hurdle that will need to be overcome is the growing need for audit trails to address patient health privacy concerns. Out-of-the-box, there are no features to track what information has been viewed during each session. Solutions to these challenges will include audit tables and triggers appropriate for privacy auditing purposes. This will require a non-trivial amount of investigation and alteration of the source code in order to attain the desired behaviour

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46 **Do the American Society of Clinical Oncology (ASCO) Value Framework Version 2 and the European Society of Medical Oncology (ESMO) Magnitude of Clinical Benefit Scale measure the same construct of clinical benefit?**

Presented By: **SIERRA CHENG**, Research Assistant, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto

OBJECTIVES: It has not been determined whether the American Society of Clinical Oncology (ASCO) Value Framework version 2 and the European Society for Medical Oncology (ESMO) Magnitude of Clinical Benefit Scale (ESMO-MCBS) measure similar constructs of clinical benefit, and how they relate to quality-adjusted life years (QALYs) and funding recommendations in the UK and Canada. **APPROACH:** Randomized clinical trials (RCTs) of oncology drug approvals by the Food and Drug Administration, European Medicines Agency and Health Canada between January 2006 and August 2015 were identified and scored using the ASCO version 1 (v1) framework (August 10, 2015), ASCO version 2 (v2) framework (May 31, 2016) and ESMO-MCBS (May 30, 2015) by at least two independent reviewers. Spearman correlation coefficients were calculated to assess construct (between frameworks) and criterion validity (against incremental QALYs from the National Institute of Clinical Excellence (NICE) and the pan-Canadian Oncology Drug Review (pCODR)). Associations between scores and NICE/pCODR recommendations were examined by logistic regression models. Inter-rater reliability was assessed using intra-class correlation coefficients. **RESULTS:** From 109 included RCTs, 108 ASCOv1, 111 ASCOv2 and 83 ESMO scores were determined. Correlation coefficients for ASCOv1 vs.ESMO, ASCOv2 vs.ESMO, and ASCOv1 vs.ASCOv2 were 0.36 (95% CI 0.15-0.54), 0.17 (95% CI -0.06-0.37) and 0.50 (95% CI 0.35-0.63), respectively. Compared with NICE QALYs, correlation coefficients were 0.45 (ASCOv1), 0.53 (ASCOv2) and 0.46 (ESMO); with pCODR QALYs, coefficients were 0.19 (ASCOv1), 0.20 (ASCOv2) and 0.36 (ESMO). None of the frameworks were significantly associated with NICE/pCODR recommendations. Inter-rater reliability was good for all frameworks. **CONCLUSIONS:** The weak-to-moderate correlations between the ASCO frameworks and ESMO-MCBS, with QALYs, and with NICE/pCODR funding recommendations suggest different constructs of clinical benefit measured. Construct convergent validity with the ESMO-MCBS in fact did not increase with the updated ASCO framework.

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47 **How Canadian oncology drug prices measure up: A cross-country comparison**

Presented By: **SONYA CRESSMAN**, Health Economist, BC Cancer Agency

OBJECTIVES: Recent cross-country comparisons indicate that prices for oncology drugs can fluctuate dramatically. In this study, we assessed whether Canadian oncology drugs are over or underpriced relative to comparison countries, and if there are any identifiable market or drug-based characteristics that could explain instances of overpricing. **APPROACH:** We used ex-factory prices to determine the percent price difference for 31 oncology drugs in Canada from the median prices in comparison countries from the Organization for Economic Cooperative Development (OECD). A parallel analysis was undertaken using prices from the US RedBook. We used an ordinary least squares regression analysis to test for dependence of percent difference on independent market variables (generic or orphan drug status, number and class of indications, time from market authorization), pharmaceutical variables (oral vs. intravenous delivery, tyrosine kinase inhibition and other mechanisms of action) and clinical benefit scores according to ASCO and ESMO evaluative frameworks. **RESULTS:** We found excessive pricing for 29% of the drugs under study with difference in prices that were up to 146% higher than the OECD median. Prices in the USA were unanimously excessive for all drugs under study. We found that Canadians pay significantly less for generic and oral cancer drugs while Americans pay more for drugs that are approved for a greater number of oncology indications and less for drugs that also have non-oncology indications. We did not find a relationship between clinical benefit scores with either evaluative framework or for any variables related to the mechanism of action of the drugs, in either country. **CONCLUSIONS:** Market effects such as generic availability and the existence of other indications appear to influence North American drug prices, rather than effects related to mechanism or clinical benefit. Generic cancer drug policy has protected against excessive prices in Canada.

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48 **Have New Drugs for Metastatic or Unresectable Melanoma Improved Survival in the Real World? A Population-Based Study**

Presented By: **TIMOTHY HANNA**, Cancer Care and Epidemiology Division of Queen's Cancer Research Institute

Background: Costly new drugs for metastatic or unresectable melanoma (MM) have shown improved survival in randomized trials (e.g. anti-CTLA-4, anti-PD-1, BRAF/MEK inhibitors). To better understand the value of these agents in routine practice, we first set out to describe their uptake and their impact on population-based outcomes. Methods: This was a retrospective, population-based cohort study of all MM in Ontario January 2007 to May 2015. Cutaneous and non-cutaneous primaries were identified in the Ontario Cancer Registry. Provincial administrative data were utilized to identify palliative systemic therapy, radiotherapy and metastatectomy. Temporal trends in chemotherapy utilization and survival by year of first MM treatment and by type of primary treatment were investigated. Kaplan-Meier survival estimates with logrank statistics were utilized. Results: We identified 2698 patients treated for MM during the study period. Median age was 64 yrs; 37% were >69 yrs. The interval between melanoma diagnosis and first MM treatment was 23 mos (49%), with little change by index year. First treatment was systemic therapy (43%), radiotherapy (44%) or metastatectomy (13%). The number of treated MM patients increased during the study period (from 284 in 2011 to 438 in 2014). Treatment with new drugs increased from. Conclusion: Utilization of systemic therapy for MM has increased considerably in routine practice 2007-2015. The adoption of new drugs was associated with substantial increases in population MM survival, largely in the subset primarily receiving systemic agents. These gains were in keeping with outcomes as reported in clinical trials.

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49 **The costs of treating metastatic gastric cancer in Ontario: a patient-level exploration of regional variation**

Presented By: **YUNNI JEONG**, University of Toronto

Background: Gastric cancer is a rare, but fatal diagnosis in North America. However, it is among the costliest cancers to treat in Canada and the United States. Very little economic data exists describing the costs of care for metastatic gastric cancer patients. Regional variation in survival and resource utilization has been documented in metastatic gastric cancer patients across Local Health Integration Networks (LHIN) in Ontario. Potential subsequent regional variation in costs has not been explored. Methods: This is a population-based, retrospective cohort study of data on patients diagnosed with metastatic gastric cancer in Ontario between 01/04/2005 and 31/03/2008. Follow-up was complete to December 31, 2012. Chart review data were used to determine cancer stage, and to describe disease characteristics (e.g. tumour location). Cost estimates were derived from provincial, administrative health services data and the literature. A twenty-six month time horizon and the healthcare system perspective were used. Cost data are presented in 2016 CAN dollars. The 14 LHINs were used to describe regional variation. A comparison of patient case-mix and costs across LHINs were performed using chi-square tests and non-parametric ANOVA. Results: Forthcoming. Conclusions: Understanding potential unnecessary variation in GC management costs across the province is important to addressing inefficiencies in the cancer system. If differences are due to inappropriate or aggressive cancer care at end-of-life, these practices have both clinical and economic evidence for discontinuation. If patient case-mix drives cost differences entirely, resource allocation and infrastructure to support management of these patients in the most cost-effective manner are necessary. Informing oncologists about how their

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50 **Comparative effectiveness of hypofractionated versus conventionally fractionated radiotherapy for low and intermediate risk prostate cancer**

Presented By: **JASON HU**, Student, McGill University

Introduction: Hypofractionated radiotherapy (HypoRT) uses larger daily fractions and shortens the overall treatment time compared to conventionally fractionated radiotherapy (ConvRT). This could improve therapeutic outcomes in prostate cancer and reduce costs of radiotherapy. The objective of the study was to evaluate clinical outcomes of HypoRT versus ConvRT regimens. Methods: The cohort consists of low- and intermediate-risk prostate cancer patients treated at the McGill University Health Center Radiation Oncology Department from Nov. 2002 to Jul. 2013. Biochemical failure was the main clinical outcome and defined as the post-treatment nadir PSA level plus 2ng/ml. Secondary outcomes included occurrences of genitourinary (GU), gastrointestinal (GI) and sexual (SX) toxicity events as evaluated by the Common Terminology Criteria for Adverse Events. Kaplan-Meier analyses were performed to evaluate the time to biochemical failure. Multivariate Cox proportional hazards regression was used to evaluate the association between the biochemical failure and fractionation type. Results: The cohort is comprised of a total of 473 patients (333 in the HypoRT group, 140 in the ConvRT group). For HypoRT, the 5 year- and 10 year-biochemical failure-free survival rates were 92.8% and 83.6%, respectively. The corresponding values for ConvRT were 87.5% and 41.3%. When adjusted with covariables, HypoRT was less at risk for biochemical failure (hazard ratio (HR) 0.51, 95% confidence interval (95%CI) 0.30 – 0.84) compared to ConvRT. Intermediate risk patients were also more at risk relative to low risk patients (HR 2.46, 95%CI 1.24 – 4.88). Frequencies of long-term GU toxicities grade 2 or greater were similar in both groups (HypoRT: 11.7%, ConvRT: 10.7%, $p = 0.756$). Long-term GI toxicities grade 2 or greater occurred in similar proportions as well (HypoRT: 16.8%, ConvRT: 12.9%, $p = 0.279$). Conclusion: In our cohort, HypoRT-treated patients were less at risk of biochemical failure relative to ConvRT-treated patients, and treatment-related toxicities were similar in both groups.

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51 **The Financial Impact of Cancer Drug Wastage**

Presented By: **CAITLYN LEUNG**, Student, Odette Cancer Centre, Sunnybrook Health Sciences Centre

Background: Cancer drug wastage occurs when any amount of a parenteral drug within a fixed vial is not fully administered to a patient. The cost consequences of wastage are borne by hospitals, patients, and society at large. This study investigated the extent of drug wastage, the financial impact on the hospital budget, and the cost-savings associated with current mitigation strategies (i.e. vial sharing amongst patients) used by the three hospitals. Methods: We conducted a cross-sectional study among three hospitals affiliated with the University of Toronto with cancer practices of varying sizes. We recorded the actual amount of drug wasted over a two-week duration. The single-dose vial cancer drugs with highest wastage potentials were identified for evaluation (14 drugs). To calculate the hypothetical drug wastage with no mitigation strategies, we determined how many vials of drugs would be needed to fill a single prescription. Results: The total drug costs over the two weeks ranged from \$50,257 to \$716,983 among three institutions. With the existing mitigation strategies, the actual drug wastage over the two weeks ranged from \$928 to \$5,472, which was approximately 1-2% of the total drug costs. In the hypothetical model with no mitigation strategies implemented, the projected amount of drug wastage would have been \$11,232 to \$149,131, which accounted for 16% to 18% of total drug cost. As a result, the potential cost savings associated with current mitigation strategies for drug wastage ranged from 92% to 96% relative to the hypothetical model with no mitigation strategies. Conclusion: The financial impact of drug wastage is substantial. Mitigation strategies lead to substantial cost-savings, with the opportunity to reinvest those savings in patients' care. The cost of wastage is only expected to increase in parallel with the increasing cancer rates and the rising cost of new drugs. More research is needed to determine the appropriate methods to minimize risk to patients while employing the cost-savings mitigation strategies, or the need for multiple and reasonable drug vial sizes.

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52 **Resource Utilization and Disaggregated Cost Analysis for Initial Treatment of Melanoma**

Presented By: **NICOLE LOOK HONG**, Surgical Oncologist, Sunnybrook Health Sciences Centre

Introduction: The incidence of melanoma is rising and accompanying treatment could be a substantial health care burden. Additionally, emerging new treatments and evolving indications for therapy lend uncertainty to the rate of changing costs. We present a contemporary microcosting analysis of initial melanoma therapy for a single-payer health system over ten years. Methods: Patients with invasive cutaneous melanoma were identified retrospectively from the Ontario Cancer Registry (2003–2012) and deterministically linked to administrative databases. We identified multimodal treatment received within a year of diagnosis and associated resource utilization and costs related to various aspects of the healthcare continuum. Costs were ascribed to surgery, radiation, systemic therapy, physician billings, inpatient, and outpatient hospital sources, and obtained using three algorithms: general health care, chemotherapy, and radiation therapy. Costs are undiscounted, unadjusted, and from the perspective of the Canadian single-payer health system. Results: From 2003-2012, 21,876 patients with invasive melanoma were identified. Median age at diagnosis was 62 and melanoma was diagnosed primarily on the extremities (43.9%). The most common modality for treatment was ambulatory surgery (50-62% of patients diagnosed each year) with an associated mean per-patient cost of \$1707 CAD. Annual rates of chemotherapy and radiation use for initial therapy have remained largely stable over the course of 10 years; 6-8% of newly diagnosed patients received chemotherapy and 9-14% of patients underwent radiation. However, corresponding annual mean per-patient costs increased over time up to maximum of \$14,429 CAD for chemotherapy and \$9,393 CAD for radiation in 2012. Conclusion: Patterns of resource utilization and cost for treatment for melanoma are changing over time, particularly for chemotherapy and radiation. Reasons for cost increases may include introduction of new drugs in 2012, and evolving modalities and indications for radiation therapy. Forecasting patterns of future costs is important for budgetary and policy planning for sustainable melanoma care.

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53 **Cost-effectiveness of smoking cessation strategies among cancer patients**

Presented By: **LISA MASUCCI**, Health Economist, St. Michael's Hospital

Background: Smoking is the leading cause of mortality and the number one cause of preventable death in Canada. Approximately 20% of patients actively smoke at the time of cancer diagnosis and 30-60% of these patients continue to smoke after diagnosis. Quitting smoking at the time of cancer diagnosis improves prognosis and results in improved general health, reduced all-cause and cancer specific mortality, reduced toxicity, and greater response to treatment. Objectives: The objective of this study was to examine the cost-effectiveness of intensive counseling + Nicotine Replacement Therapy (NRT) for smoking cessation among patients diagnosed with cancer. Methods: A cost-effectiveness analysis was conducted from the perspective of the publicly funded health care system comparing intensive counseling + NRT to four potential alternatives: intensive counseling alone, NRT alone, varenicline alone, and bupropion alone. A Markov model followed 65 year old smokers newly diagnosed with cancer over a lifetime horizon. Transition probabilities and utilities were obtained from the literature. Costs were obtained from standard costing sources in Ontario (in 2016 Canadian dollars). Outcomes were quality-adjusted life-years (QALYs). Probabilistic and deterministic sensitivity analyses were conducted to address the uncertainties of the findings. Results: Compared to NRT alone, intensive counseling + NRT cost \$129 more and produced 0.0121 more QALYs (ICER \$10,661/QALY). However, the ICERs were \$58,662/QALY, \$61,881/QALY, and \$63,058/QALY, when intensive counseling + NRT was compared to counseling alone, varenicline alone, and bupropion alone, respectively. The results were most sensitive to the quit rate. Conclusions: Intensive counseling + NRT has the potential to be cost-effective when compared to NRT alone.

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54 **Examining the relationship between cost of novel oncology drugs and their value or clinical benefit over time**

Presented By: **RONAK SALUJA**, Research Assistant, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto

Objective: The average launch price of oncology drugs has increased by 10% annually from 1995 to 2013. The purpose of this study was to determine if the value/clinical benefit of novel oncology drugs has increased comparatively over time and is correlated with launch price. Methods: Oncology drugs from randomized controlled trials (RCTs) cited for clinical efficacy evidence in drug approvals between January 2006 and August 2015 were identified. For each drug, only the first FDA approved indication was included. To determine value/clinical benefit, all included RCTs were scored using the ASCO Value Framework and the ESMO Magnitude of Clinical Benefit Scale. The launch price for the FDA approval year of each drug was extracted from RedBook. Each drug's 28-day cost was determined using the dosage schedule outlined in the respective RCT and was adjusted to 2015 USD using the consumer price index. The relationships between 28-day drug cost and FDA approval year, and between incremental drug cost (difference in total drug cost between experimental and control arms accounting for treatment duration) and FDA approval year were examined using generalized linear regression models (gamma distribution with log link). Ordinary least square models were used to evaluate the relationship between ASCO/ESMO scores and FDA approval year. Spearman's correlation coefficients between 28-day/incremental drug costs and ASCO/ESMO scores were also calculated. Results: Forty RCTs were included in this analysis. The 28-day drug cost was significantly associated with FDA approval year ($p=0.04$), with an average increase of 8.5% per year. Incremental drug cost was also significantly associated with FDA approval year ($p<0.05$). Conclusion: Despite the rise in cost of novel oncology drugs over time, an increase in their value over time is not observed. Costs of drugs and their values/clinical benefit also showed no direct correlation.

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55 **Using Randomized Pragmatic Studies to Compare Intravenous Access Strategies for Patients Receiving Chemotherapy for breast Cancer 1. not receiving trastuzumab. (REACT-VA Her2 negative) and 2. receiving trastuzumab. (REACT-VA trastuzumab)**

Presented By: **ANDREW ROBINSON**, Medical Oncologist, Kingston General Hospital

Introduction: A recent survey of patients, nurses and medical oncologists confirmed significant clinical equipoise in the use of intravenous access strategies for the delivery of intravenous (IV) chemotherapy in patients with early stage breast cancer. Strategies ranged from peripheral access, to indwelling catheters such as peripherally inserted central catheters (PICCs) and PORTs. Variables associated with the choice of access strategy included; oncologist preference, chemotherapy regimen and the use of trastuzumab. Despite large differences in cost and care associated with these access strategies, there is no high quality data comparing them. While the RETHinking Clinical Trials (REaCT) program was established to perform pragmatic, cost-efficient trials comparing established standard of care treatments, to date REaCT trials have been performed to compare supportive care drugs, this is the first REaCT trial to evaluate a medical procedure. Methods: Breast cancer patients receiving chemotherapy with/without trastuzumab are informed about the study using both oral consent and a written consent template. If the patient gives verbal consent, this is noted in the patient charts. For patients receiving trastuzumab, randomization is between a PORT and a PICC (REaCT-VA trastuzumab). For non-trastuzumab based chemotherapy, randomization is between peripheral access and a PICC (REaCT-VA Her2 negative). Outcome data includes: study feasibility and clinical endpoints such as extravasations, thrombotic events, anticoagulant use, line infections, line occlusion and attempts at cannulation. Results: Both studies opened in April 2016. In Ottawa and Kingston, 15/17 patients approached for REaCT-VA trastuzumab have been randomized, and 48/54 patients approached for REaCT-VA Her2 negative were randomized. Data from 7 available complications include; line clots (1), PICC migration (1), line infections (3), and grade 1 extravasations (n=2). Conclusion: Both REaCT-VA Her2 negative and REaCT-VA trastuzumab are still open to accrual. Determining the optimal vascular access strategy remains an important medical issue for patients, physicians and society.

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56 **Prolaris and Decipher: Impact on Prostate Cancer Decision of Treatment**

Presented By: **GHADEER OLLEIK**, Master's Student in Experimental Surgery, McGill University

Background: In Canada, it is estimated that prostate cancer (PCa) will account for 21% of all new cancer cases in 2016. Inaccurate risk classification is a challenge due to the limited ability of current risk assessment tools and modalities in distinguishing indolent from aggressive cancers. There is a need for evidence-based testing that will improve stratification accuracy. Prolaris and Decipher are new promising tools that could decrease the uncertainties accompanying treatment decision following a positive biopsy and disease management post-prostatectomy in PCa. OBJECTIVE: This systematic review assesses the clinical utility of Prolaris and Decipher in PCa treatment after a positive biopsy and post-prostatectomy, respectively. Methods: The Cochrane, Embase, Medline, and Web of Science databases were searched for clinical utility studies that included a measure of the percentage of altered decision-making or risk reclassification after test utilization. Results: The search yielded 334 articles, of which seven met the inclusion criteria. Three articles evaluated the use of Prolaris after a positive biopsy and four examined Decipher post- prostatectomy. Both tests demonstrated a change in treatment recommendations between pre- and post- testing. Overall, Decipher altered 36% of treatment decisions post-prostatectomy, and data showed an increase in recommendations for observation ranging between 20% and 42%. In particular, one study resulted in the reclassification for over 60% of high-risk patients to low-risk post-Decipher testing. On the other hand, in one study on Prolaris, a 47.8% change in treatment decision was noted, of which 72% was treatment reductions. Similarly, in another study based on a physician selected population, Prolaris lead to a 37.2% reduction in interventional treatment.

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57 **Are “surrogate” endpoints unbiased metrics compared to hazard ratio for death?: An evaluation of clinical benefit scores (CBS) in the American Society of Clinical Oncology (ASCO) value framework**

Presented By: **MAHIN QURESHI**, Research Assistant, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto

Introduction: The American Society of Clinical Oncology (ASCO) value framework evaluates clinical benefit scores (CBS) based on a hierarchy of efficacy endpoints, from hazard ratio for death (HR OS), to median overall survival (mOS), HR for disease progression (HR PFS), median progression-free survival (mPFS), and response rate (RR). When HR OS is unavailable, subsequent endpoints in the hierarchy are used as “surrogates” to calculate CBS using the framework’s corresponding scaling factor. We aim to examine whether surrogate-derived CBS offer unbiased scoring of clinical benefit compared to HR OS-derived CBS. Methods: CBS for advanced disease settings were computed for randomized clinical trials (RCTs) from oncology drug approvals by the Food and Drug Administration, European Medicines Agency, and Health Canada, between 2006 and August 2015. Spearman’s correlation assessed association between surrogate-derived CBS and HR OS-derived CBS. Mean bias (surrogate-derived CBS minus HR OS-derived CBS) evaluated tendency for surrogate-derived CBS to over- or under- estimate clinical benefit. Mean absolute error (MAE), a measure of average deviation, assessed precision of surrogate-derived CBS in relation to HR OS-derived CBS. Results: One hundred-four RCTs with reported efficacy endpoints were scored. Correlation coefficients were 0.75 (95% CI 0.62-0.84), 0.20 (-0.01-0.39), 0.07 (-0.14-0.27), and 0.09 (-0.12-0.29) for HR OS-derived CBS vs. mOS, HR PFS, mPFS, and RR, respectively. In the same order, mean biases were 2.43 (n=69), 12.35 (n=93), 42.30 (n=88), and 4.96 (n=89). Proportions of overestimation by more than 20 points were 8.7% (mOS), 25.8% (HR PFS), 60.9% (mPFS), and 27.3% (RR). MAEs were 9.78 (mOS), 16.14 (HR PFS), 46.95 (mPFS), and 18.50 (RR). RCTs reporting all endpoints (n=59) exhibited similar results. Surrogate-derived CBS overestimated up to 324 (mPFS), 107 (mOS), 57 (HR PFS), and 48 (RR). Conclusions: Findings suggest HR PFS-, mPFS-, and RR-derived CBS are poor “surrogates” as they are imprecise and weakly correlated to HR OS-derived CBS. HR PFS and particularly mPFS exhibit bias to overestimate CBS. Rescaling surrogate-derived CBS according to empirical data should be considered.

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58 **Shifting trends: An analysis of IV and take-home cancer drug use and public spending in Ontario**

Presented By: **ROHINI NAIPAUL**, Senior Pharmacist, Cancer Care Ontario

Background: The development and use of oral chemotherapy and other take home cancer drugs (THCD) have significantly increased over the past decade. Ontario Public Drug Programs provides public funding for outpatient use of both THCD and intravenous cancer drugs (IVCD). To inform system planning and support sustainable reimbursement policies, we examined trends in costs and utilization of THCD and IVCD over the last 6 fiscal years (2010-2015). Approach: Ontario Drug Benefit claims data, sourced from the Institute of Clinical Evaluative Sciences, were reviewed to identify 74 THCD for inclusion. Claims data were obtained for all 39 IVCD funded through Cancer Care Ontario’s New Drug Funding Program. Annual government costs and number of utilizing recipients were collected to estimate average annual growth rates (AAGRs). Results: At the time of analysis, government spending on THCD rose from \$199 to \$371 million over a six-year span at an AAGR of 13.4%. Spending on IVCD increased from \$219 to \$344 million at an AAGR of 9.7%. In four of the six years, THCD spending was higher than IVCD. Over the six years, the growth in spending was more than double the growth in utilizing recipients with an AAGR of 2.8% for IVCD and 4.6% for THCD. Interpretation: While both utilization and costs of IVCD and THCD continue to grow, use, spending and growth for THCD have outpaced IVCD, which outpaces growth in many other areas of the health system. Reimbursement policies should be considered in the context of the need for long-term funding sustainability.

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59 **What types of reimbursement recommendations are made for cancer drugs by the pCODR Expert Review Committee using evidence from only nonrandomized trials?**

Presented By: **STEPHANIE ROSS**, CADTH

BACKGROUND: The CADTH pan-Canadian Oncology Drug Review (pCODR) is responsible for assessing the efficacy, safety and cost-effectiveness of cancer drugs. These evaluations are provided to the pCODR Expert Review Committee (pERC), whose role is to make reimbursement recommendations for cancer drugs in Canada. In order to do so, pERC utilizes a Deliberative Framework, which weighs important factors in the decision-making process. These factors include assessment of the clinical benefit and cost-effectiveness of the drug, alignment with patient values and feasibility of implementation. However, the impact of evidence from nonrandomized clinical trials on these recommendations is unclear. **OBJECTIVES:** To summarize the factors that might influence pERC reimbursement recommendations that are based solely on clinical evidence from nonrandomized trials. **METHODS:** A bibliographic analysis of CADTH pCODR reviews with a content analysis of the pERC Final Recommendations Report. **RESULTS:** Among the 80 pCODR reviews, 12 used evidence from nonrandomized trials. Four pCODR reviews used data from two nonrandomized clinical trials while eight used data from only one nonrandomized trial. Six of the reviews were on lymphoma and myeloma, three were on leukemia, three were on lung cancer and one was on melanoma. Among all of the reviews, pERC made one positive recommendation for reimbursement, six conditional recommendations, and five recommendations not to be reimbursed. The rationale for the positive recommendation was an unmet need in the patient population, cost-effectiveness and alignment with patient values. The reasons for conditional recommendations varied. In contrast, the rationale for a negative recommendation, in all cases, was a lack of data on clinically important outcomes, not demonstrating cost-effectiveness and partial alignment with patient values. In addition, two of the reviews that received a negative recommendation had pertinent ongoing phase III trials. **CONCLUSION:** Final pERC recommendations using clinical data from nonrandomized trials were varied. Although nonrandomized trials provide limited evidence on the drug effect, there are other key elements that pERC takes into consideration when making reimbursement recommendations for Canada.

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60 **Cost-Effectiveness Analysis of the First-Line Use of Biologics for Wild-Type (WT) KRAS Unresectable Metastatic Colorectal Cancer (mCRC) based on primary tumor location**

Presented By: **WILLIAM WL WONG**, Assistant Professor, School of Pharmacy, University of Waterloo

Introduction: CALGB 80405 compared the addition of bevacizumab (BEV) versus cetuximab (EGFRI) to first line (1L) chemotherapy (chemo) and revealed that the primary tumor location might influence the efficacy, with left (L) sided mCRC benefiting more from EGFRI and right (R) sided mCRC more from BEV. We aim to examine the cost-effectiveness of the strategy of choosing Bev vs. EGFRI based on primary tumor location. **Method:** A cost-utility analysis using a state-transition model was performed for patients with WT K-RAS unresectable mCRC in 1L. We compared 3 strategies: Strategy A (BEV 1L): 1L BEV+chemo, followed by chemo in 2nd line (2L), followed by EGFRI in 3rd line (3L); Strategy B (EGFRI 1L): EGFRI+chemo as 1L, followed by BEV+chemo as 2L; Strategy C (Treatment based on primary tumor location): Left side colon: use strategy B; Right side colon use strategy A. Efficacy data were obtained from the presented results of CALGB and the published literature. Utilities were obtained from the literature and costs from the Ontario Ministry of Health and the literature. The perspective of the Canadian public health care system was used over a 5-year time horizon with a 5% discount. **Results:** The "Treatment based on primary tumor location" strategy is more costly but more effective than "BEV 1L", with a net (discounted) increment of \$41,016 and 0.077 QALYs gained (or 0.139 undiscounted life years), translating to an incremental cost-effectiveness ratios of \$529,491/QALY compared with "BEV 1L" strategy. A 62% price reduction in EGFRI is needed to make the "treatment based on primary tumor location" to be cost-effective under a threshold of \$100,000/QALY. "EGFRI 1L" strategy was more expensive and less effective than "treatment based on primary tumor location" strategy and was ruled out due to dominance. **Discussion:** First-line use of biologics based on primary tumor location has a modeled benefit of about 1.7 months. The price of EGFRI needs to be substantially lower to make this strategy cost-effective compared to using "BEV 1L" for all patients

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61 **The impact of pricing strategy on the cost of oral anti-cancer drugs during dose reductions**

Presented By: **JUDY TRUONG**, Medical Student, University of Toronto

BACKGROUND: The pricing strategy of oral medications can affect their costs. The strategy of flat pricing per tablet may increase drug costs in the event of dose reductions requiring more tablets, as there is a single price for different tablet strengths, but the impact is largely unknown. With linear pricing, the tablet price increases with its strength. We sought to determine the impact of pricing strategy on the cost of oral anti-cancer drugs during dose reductions. **METHODS:** Oral anti-cancer drugs reviewed by the pan-Canadian Oncology Drug Review were identified between July 2011 to January 2015. The pricing strategy of these drugs was reviewed. We examined the percentage change in cost per mg and cost per 28 days as a result of dose reduction from dose level 0 to -1 and -2 for each drug. **RESULTS:** Seventeen drugs for use in 20 indications were analyzed; three drugs for hematological malignancies and 14 for solid cancers. Fifty-nine percent (10/17) of these drugs were available in multiple strengths; five utilized fixed pricing per tablet and the other 5 utilized linear pricing. The remaining drugs (7/17) were available in a single strength. Dose reductions generally increased the cost per mg for drugs using flat pricing per tablet, with a mean increase of 82% (range: 25%-200%) at dose level -1 and 100% (range: 0%-200%) at dose level -2. Dose reduction had no effect on the cost per mg of drug for drugs using linear pricing apart from lenalidomide, which had increased costs due to minimal price variation between the highest and lowest tablet strengths. In general, dose reduction did not decrease the cost per 28 days of drug for drugs using flat pricing per tablet, but was proportionally reduced with linear pricing. **CONCLUSIONS:** While there is a general expectation that the cost of drugs should decrease with dose reduction, oral anti-cancer drugs using flat pricing per tablet have increased cost per mg and no decrease in cost per 28 days.

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62 **The impact of intravenous cancer drug wastage on economic evaluations**

Presented By: **JUDY TRUONG**, Medical Student, University of Toronto

BACKGROUND: Intravenous drugs administered through body-surface area (BSA) or weight-based dosing may cause wastage due to large and/or limited fixed vial sizes, and vial sharing restrictions. Drug wastage leads to incremental costs without incremental value to patients. Bach et al. (2016) estimated that 10% of revenue (\$1.8 billion) from cancer drugs would result from wastage in 2016. The pan-Canadian Oncology Drug Review (pCODR) committee provides recommendations on which drugs to publicly reimburse by reviewing clinical and economic evidence. We sought to determine the impact of modeling cancer drug wastage on the results of economic evaluations. **METHODS:** Economic evaluations submitted by drug manufacturers and reviewed by the pCODR Economic Guidance Panel (EGP) were assessed for frequency of wastage reporting and modeling. Cost-effectiveness analyses and budget impact analyses were conducted for "no wastage" and "wastage" scenarios. Sensitivity analyses were performed to determine the effects of BSA and weight variation. **RESULTS:** 12 drugs for use in 17 indications were analyzed. Wastage was reported in 71% and incorporated in 53% of manufacturer's models, resulting in a mean incremental cost-effectiveness ratio (ICER) increase of 6.1% (range: 1.3% to 14.6%). EGP reported and incorporated wastage for 59% of models, resulting in a mean ICER increase of 15.0% (2.6% to 48.2%). When maximum wastage (i.e. the entire unused portion of each vial is discarded) was incorporated in our independent analysis, the mean ICER increased by 24.0% (0.0% to 97.2%) and the mean 3-year total incremental costs increased by 26.0% (0.0% to 83.1%). Over a 3-year period, wastage can increase the total incremental drug budget cost by CAD \$102 million nationally. Changing the mean BSA or body weight caused 45% of the drugs to use a different vial size (when multiple sizes are available) and/or quantity, resulting in further increased drug costs. **CONCLUSIONS:** Wastage can have an under-recognized and significant impact on economic evaluations of intravenous chemotherapy drugs. Guidelines are needed to promote uniform and optimal modeling of drug wastage in economic evaluations.

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63 **Cost-effectiveness of Sunitinib vs. Pazopanib in metastatic renal cell carcinoma (mRCC) patients using real-world data from academic centers in Canada (Ckcis)**

Presented By: **SARA NAZHA**, PhD Student, McGill University

The purpose of this study was to assess the cost-effectiveness of targeted therapies for clear-cell mRCC patients using real-world data from a Canadian database. Methods: A pan-Canadian database was used to select prospective patients with mRCC who received targeted therapy from January 2011 until June 2016. Patients had to have a confirmed histological diagnosis of mRCC with clear cell subtype and receive targeted therapy. First and second-line TTT (time to treatment termination) was determined from the time of initiation of the therapy (sunitinib or pazopanib) until discontinuation of therapy. Survival curves (Kaplan-Meier and direct adjusted survival curves) were used to estimate the overall survival by treatment. Cox regression was used to examine the effect of treatment controlling for demographic, disease, and treatment characteristics. The costs of drugs were estimated by using the average duration of treatment in each line of therapy based on results from the database. Incremental cost-effectiveness ratio (ICER) was obtained by dividing the difference between the cost of sunitinib and pazopanib and the difference between the mean survivals of sunitinib compared to pazopanib. Only drug costs were considered in this analysis. Results: As of June 2016, there were 4314 patients entered in the database as prospective patients with kidney cancer. 376 patients received targeted treatment as part of the management of their disease and were included in the final analysis. 83% of patients were treated with sunitinib and 17% with pazopanib. The median TTT in first line for sunitinib and pazopanib patients was 7.7 and 5.9 months respectively ($p=0.0027$). The adjusted OS with sunitinib was 33 months compared to 24 months with pazopanib, but there was not a statistically significant difference between the 2 groups ($p=0.08$). The median cost of therapy for sunitinib and pazopanib was \$57,792 (95%CI : 23,063-119,456) and \$47,872 (95%CI: 28,039-89,041) respectively. The ICER of sunitinib is \$11,905/Life-year gained compared to pazopanib. Our pan-Canadian database demonstrates longer survival for patients treated with sunitinib. This incremental survival is linked to a \$11,905/Life-year gained.

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64 **Cost-utility analysis of the Prolaris test for prostate cancer in patients with a positive biopsy**

Presented By: **ALICE DRAGOMIR**, Professor, McGill University

Introduction: Improving the accuracy of risk stratification at diagnosis is an important goal in prostate cancer (PCa) research. The fast growth of the field of molecular diagnostics has created a need for cost-effectiveness evidence. Methods: A Markov model was used to estimate the quality adjusted life years gained (QALYs) and costs for three strategies (the standard 12-core TRUSGB strategy, the MRI-guided biopsy (MRGB) strategy and the standard TRUSGB plus Prolaris) over 5, 10, 15 and 20 years. The model takes into account the accuracy of diagnostic tests and the probability of being assigned to various treatment options. We assumed that patients re-categorized with Prolaris to very low risk PCa will all be placed on active surveillance. Direct medical costs based on the Quebec healthcare system's perspective were included. The cost-utility analysis was performed by dividing the difference in costs by the difference in QALYs between the TRUSGB + Prolaris strategy, and TRUSGB and MRGB strategies. Results: The difference in QALYs between TRUSGB + Prolaris and TRUSGB ranged from 0.01 to 0.11, with the highest difference observed over the 20-year time horizon. The corresponding values of the cost difference ranged from 1,900CAD and 1,000CAD. In addition, no benefit in QALY was observed between the TRUSGB + Prolaris strategy and the MRGB strategy. However, a higher cost was observed in the TRUSGB + Prolaris strategy (between 2,300CAD at 5 years and 4,300CAD at 20 years). The cost-utility analysis revealed an incremental cost-utility ratio (ICUR) as high as 190,000CAD/QALY at 5 years and as low as 9,200CAD/QALY at 20 years. Conclusions: Our preliminary results suggest that the incorporation of Prolaris in PCa diagnosis represents a cost-effective measure over a 10-, 15- and 20-year time horizon, with an ICUR below the threshold of 50,000CAD. However, the TRUSGB + Prolaris strategy was costlier and less effective than the MRTB strategy.

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Comparative effectiveness and safety of the implementation of universal public funding of FOLFIRINOX (FFX) and gemcitabine (G) + nab-paclitaxel (GnP) in advanced pancreatic cancer (APC): An era-based population-based study in Ontario, Canada

Presented By: **KELVIN CHAN**, Medical Oncologist, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto, Canadian Centre for Applied Research in Cancer Control

Background: FFX has been universally publicly funded for metastatic pancreatic cancer (mPC) and unresectable locally advanced pancreatic cancer (uLAPC) since 11/2011 and 04/2015, respectively. GnP has been publicly funded for uLAPC and mPC (APC) since 04/2015. We examined the real world comparative effectiveness and safety of implementing funding of FFX and GnP for patients with APC. **Methods:** Patients with APC who received first-line FFX, GnP, or G from 01/2008-03/2016 were identified in CCO's New Drug Funding Program database and divided into 3 periods: 01/2008-10/2011 (P1), 11/2011-03/2015 (P2), and 04/2015-03/2016 (P3). Data were linked with the Ontario Cancer Registry and others to ascertain demographics, comorbidities, and outcomes. Crude and adjusted survival analyses were conducted to assess overall survival (OS) using Kaplan-Meier and Cox regression methods, and negative binomial models were used to estimate rate ratios (RR) for all-cause hospitalization (H) and emergency department (ED) visits. **Results:** We identified 3696 patients (1250 in P1, 1891 in P2, 555 in P3) (overall mean age 65, female 46%). In P2, 49% received FFX. In P3, 53% received FFX and 35% received GnP. Median OS was 5.7, 7.0, and 7.5 months for P1, P2, and P3, respectively. Median OS for FFX and GnP in mPC were 8.8 and 5.5 months, respectively. OS was improved in P2 (HR=0.86, 0.79-0.92), but not in P3 vs. P2 (HR=0.89, 0.78-1.01). Compared to P1, ED visits were similar in P2 (RR=0.97, p=0.58) but increased in P3 (RR=1.17, p=0.02), and H was reduced in P2 (RR=0.8, pp=0.52). H for febrile neutropenia (FN) increased in P2 (RR=2.53, p. Conclusion: Implementation of universal public funding of FFX for mPC improved OS and reduced the rates of H overall, but increased FN-related H. Funding of FFX for uLAPC and GnP for APC resulted in a trend towards better OS, but increased rates of ED visits and FN-related H. The real world median OS for mPC was shorter than reported in trials.

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A real-world population-based comparative symptom analysis of patients with advanced pancreatic cancer (APC) receiving first line FOLFIRINOX (FFX), gemcitabine + nab-paclitaxel (GnP) or gemcitabine (G)

Presented By: **KELVIN CHAN**, Medical Oncologist, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto, Canadian Centre for Applied Research in Cancer Control

Introduction: Cancer Care Ontario has collected Edmonton Symptom Assessment System Revised (ESAS-r) scores for patients treated in regional cancer centres since 2007. Scores are collected for nine symptoms (pain, tired, drowsy, nausea, appetite, dyspnea, depression, anxiety, wellbeing) on scales ranging from 0 (none) to 10 (worst); total ESAS-r score ranges from 0 to 90. We compared real-world symptom changes over time in patients with APC who received FFX, GnP, or G, which are publicly funded by the New Drug Funding Program (NDFP) in Ontario. **Methods:** Patients with complete ESAS-r scores at baseline and at least 1 record at 2, 4, or 6 months after starting first-line treatment were identified in the NDFP database and linked to additional databases to ascertain baseline characteristics and previous surgical resection, adjuvant G, and radiation. Generalized estimating equations were used to analyze change in ESAS-r scores over time and across regimens. **Results:** We identified 1831 patients treated with FFX (N=785), GnP (N=108), or G (N=938) (mean age=64.8, 45% female) with baseline total ESAS-r scores of 23.1, 23.4, and 25.7, respectively. After adjusting for confounders, FFX recipients showed change from baseline total ESAS-r score of -3.3 (ppp=0.01) at 2, 4, and 6 months, respectively (negative change = improvement). GnP recipients showed change from baseline total ESAS-r score of +1.6 (p=0.3), +1.3 (p=0.4), and +4.7 (p=0.02) at 2, 4, and 6 months, respectively. G recipients showed change from baseline total ESAS-r score of -0.65 (p=0.2), +0.2 (p=0.7) and +1.3 (p=0.09) at 2, 4, and 6 months, respectively. Compared to G, ESAS-r score change was significantly improved for FFX, but not for GnP. All individual scales, except nausea and dyspnea, showed similar pattern. **Conclusion:** In the real-world, FFX was associated with improved symptom scores when compared to G for APC, which is consistent with the results from the landmark FFX trial. We could not detect an effect of GnP on symptom scores.

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67 **Cancer Drug Funding Prioritization Frameworks: A systematic review**

Presented By: **PAM TAKHAR**, Research Associate, Cancer Care Ontario

Background: Cancer drug funding agencies in Ontario and around the world are faced with the difficult task of reimbursing costly cancer treatments while balancing fiscal budget constraints. Value assessment tools and priority-setting approaches are gaining momentum as a means to help establish a sustainable drug funding system. Purpose: We conducted a systematic review (1) to identify existing prioritization and value assessment tools and strategies; (2) to evaluate the specific components within and between identified tools and priority-setting strategies; and lastly (3) to explore the outcomes associated with value assessment tools and priority-setting approaches. Methods: We searched five electronic databases (Ovid MEDLINE, Ovid EMBASE, Econ Lit, Business Source Premier and Health Technology Assessment Database via The Cochrane Library) and performed a Web-based search to locate relevant research literature. Two reviewers screened citations to determine eligibility and a single reviewer extracted relevant data from all included articles. Results: Of the 6,090 citations identified, a total of 20 articles reported a framework for priority-setting/funding decisions (n=9), value assessment tools (n=6), outcomes associated with value assessment tools/priority-setting approaches within the real-world setting (n=6) and stakeholder perspectives surrounding funding preferences and decisions (n=2). A cross-comparison of the value assessment tools and priority-setting approaches revealed several limitations, benefits and commonalities. Furthermore, assessing and prioritizing cancer drugs within the real-world setting highlighted a number of challenges. For instance, assessing the value of cancer treatments was found to be an onerous process; decision-makers were often conflicted with political pressures from payers and physicians making it difficult to lower/raise the evidence threshold; evaluating limited evidence derived from phase II studies and prioritizing costly treatments for rare cancers. Conclusion: Our review highlighted several limitations, benefits and commonalities between each of the value assessment tools and priority-setting approaches. Although, no gold standard currently exists for prioritizing and/or assessing the value of cancer drugs—establishing a transparent, consistent, fair and ethical priority-setting process—balancing views amongst various stakeholders— are considered essential components for developing future prioritization efforts.

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68 **The cost and cost-trajectory of applying whole-genome analysis to guide treatment for patients with advanced cancers**

Presented By: **DEIRDRE WEYMANN**, Health Economist, BC Cancer Agency

Purpose: Whole-genome sequencing (WGS) and subsequent analysis represents a potential future standard of care in oncology. Yet limited data exists on the real-world costs and cost-trajectory of applying whole-genome analysis (WGA) in a clinical setting. We estimated the costs of applying WGA to guide treatments for patients with advanced cancers and characterized how these costs evolve over time. Methods: The setting is the British Columbia Cancer Agency Personalized OncoGenomics (POG) program in British Columbia, Canada. Cost data were obtained for patients who underwent POG's comprehensive form of WGA from July 2012 to December 2015. We estimated mean costs across patients using bootstrapping and applied time-series analysis to explore changes in costs over time. We estimated autoregressive integrated moving average models with explanatory variables and produced ten-year forecasts to determine when costs are expected to reach critical thresholds of \$1,000, \$3,000, or \$5,000 per patient. Results: On average, WGA cost CDN\$34,886 per patient (95% CI: \$34,051, \$35,721) over the study period. While mean WGA costs decreased over time, driven by a reduction in the costs of WGS and transcriptome sequencing, changes were partially offset by increasing costs of other components of WGA. Forecasting showed WGS and transcriptome sequencing costs could reach \$1,000 per patient in as few as 6 years. We project it will take longer before comprehensive WGA costs reach a similarly low threshold within a clinical setting. Conclusion: WGA costs decreased over the studied time horizon, but expenditures needed to realize WGA remain significant. Despite these costs, WGA offers many potential benefits and future research exploring the trade-off between costs and benefits of WGA-guided cancer care is essential to guide health policy and planning.

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69 **Radiation Incident Safety Committee: Improving Quality and Safety within Radiation Treatment**

Presented By: **CARINA SIMNICEANU**, Specialist, Policy, Cancer Care Ontario

PURPOSE: The Radiation Treatment Program (RTP) at Cancer Care Ontario (CCO) established the Radiation Incident Safety Committee (RISC) in 2006 to provincially disseminate radiation incidents and safety information. The National System for Incident Reporting-Radiation Treatment (NSIR-RT) is a national incident reporting and learning system for radiation treatment (RT) incidents, developed and implemented by the Canadian Partnership for Quality Radiotherapy (CPQR) and the Canadian Institute for Health Information (CIHI). CIHI and CPQR developed a NSIR-RT pilot project to beta test issues with data entry and functionality. RISC played a pivotal role in evaluating the pilot program using a health technology assessment (HTA) framework. **METHODS:** The HTA of the NSIR-RT pilot by RISC evaluated whether the system improves RT quality and safety. The NSIR-RT pilot ran from December 2015 to December 2016 and 13 out of 14 regional cancer programs represented within RISC registered for the pilot. The assessment was facilitated through monthly teleconferences with provincial primary and secondary Radiation Incident Leads (RILs) to discuss user experiences and feedback. Annual in-person RISC meetings provided a forum for sharing updates and establishing user focus groups. On an annual basis, reporting tools, taxonomies, processes, and user experiences are collected from regional radiation programs. **RESULTS:** RISC provided feedback to CIHI and CPQR around the pilot. The feedback helped inform the following changes: establishment of a framework to support improved understanding and utilization of NSIR-RT, development of a new data standard to enhance local compatibility with NSIR-RT, adjustments to the minimum data set, including problem type, to improve reporting accuracy and enhance learning opportunities. **CONCLUSIONS:** This abstract demonstrates how a provincial committee effectively collaborated with a national initiative to achieve safety, system and quality improvements in RT. Work-to-date has focused on mitigating barriers and system usage to improve the quality of radiation treatment and patient safety across Ontario, while future work will continue supporting the formalization of the system.

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BOARD

SURVIVORSHIP

70 **Do Elderly and Young Patients Derive Similar Relative Survival Benefits from Novel Oncology Drugs? A Systematic Review and Meta-Analysis**

Presented By: **VANESSA ARCIERO**, Research Assistant, Odette Cancer Centre, Sunnybrook Health Sciences Centre, University of Toronto

Background: Elderly patients are commonly believed to derive less benefit from cancer drugs, even if they fulfil clinical trial eligibility. We aim to examine if novel oncology drugs provide differential treatment outcomes for elderly and young patients on clinical trials. **Methods:** A systematic review of randomized control trials (RCTs) cited for clinical efficacy evidence in novel oncology drug approvals by the Food and Drug Administration, European Medicines Agency, and Health Canada between 2006 and 2015 was conducted. Studies reporting age-based subgroup analyses for overall or progression free survival (OS/PFS), were considered. Independent reviewers extracted survival hazard ratios (HRs) and confidence intervals (CIs) for age-based subgroups. Meta-analyses based on an inverse variance random effects model were performed to examine patient subgroups. **Results:** Eighty-five RCTs, including 55,512 patients, reported age-based survival outcomes and were included. One study reported age-based toxicity and no studies age-based quality of life results. Pooled HRs [95% CIs] for patients P=0.08). All sensitivity analyses revealed similar results. **Conclusion:** Our results suggest that elderly and young patients derive similar relative survival benefits from novel oncology drugs. In settings where there is no other direct high-level evidence of elderly patients deriving less benefit than younger patients, it is reasonable to consider offering novel oncology drugs to elderly patients who fulfil trial eligibility. There is, however, a need to report age-based toxicity and quality of life results to support patient discussions regarding the balance of treatment benefit and harm, to encourage informed individualized decision-making.

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71 **Diffuse Large B-cell Lymphoma: A single institution experience of patient outcomes**

Presented By: **RYAN CHAN**, Student, University of Toronto

Objectives: The Windsor Regional Cancer Program (WRCP) was determined to have consistently been a top performer in time to treatment of diffuse large B cell lymphoma in this Canadian province. (1) We endeavored to determine whether faster time to diagnosis and treatment for diffuse large B-cell lymphoma (DLBCL) influenced the IPI score (International Prognostic Score), thereby predicting an improved clinical outcome in these presenting patients. Methods: The WRCP services a catchment area of 650,000 people. A retrospective chart review was conducted for patients diagnosed with DLBCL at the Windsor Regional Cancer Program (WRCP) between 2006-2012. Information collected included the five factors for scoring by the International Prognostic Index (IPI) – age, performance status, LDH, stage, and number of extranodal sites – chemotherapy regimen, relapses, existence of second malignancies, cause of death, and dates of diagnosis, last follow-up, and death. We analyzed the relationship between prognostic factors and these clinical outcomes, and also compared the IPI scores for this cohort of patients against a similar population in another Canadian province, British Columbia. Results: It is established that compared to other cancer centres in Ontario, the WRCP is consistently reporting a shorter diagnosis to treatment metric when compared to their counterparts in Ontario, Canada. When compared to historical Canadian data, presenting IPI scores for DLBCL patients were lower on average for patients treated at the WRCP than those reported in British Columbia, Canada by Sehn et al.[2]. Conclusion: A lower presenting IPI score is known to be correlated improved lymphoma related outcome. With attention to the metric of diagnosis to treatment < 30 days for diffuse large B cell lymphoma, we expect an improved lymphoma related outcome for our patients. We recommend ongoing attention to this metric, in order to improve outcomes for our patients

Co-Authors: Ryan Chan, University of Toronto; Caroline Hamm, Windsor Cancer Research Group

72 **Temporal treatments and outcomes following acute myocardial infarction among cancer survivors: a population-based study, 1995-2013**

Presented By: **INNA GONG**, MD Candidate, University of Toronto

Background: There is little contemporary information regarding cardiac care and mortality differences following an acute myocardial infarction (AMI) between cancer survivors (CS) and non-cancer patients (NCP). Methods: All patients with AMI (1995-2013) in Ontario, Canada were identified through administrative databases and stratified into CS (solid or hematologic) and NCP. Those with cancer within 1 year of AMI were excluded. We used inverse probability treatment weight of propensity scores to balance confounders (demographics, risk factors, and comorbidities). Coronary intervention use and survival following index AMI were compared between CS and NCP using Modified Poisson and Cox modeling as appropriate, and their temporal trends were examined. Results: Of 270,089 AMI patients (62.1% men; 87.8% >65 years old for CS vs. 56.2% for NCP), 22,907 were CS (prostate 25.7%, colorectal 16.5%, breast 16.3%) and 247,182 NCP. From 1995-2013, coronary interventions usage increased similarly for both groups (P-for-trend. Conclusions: Following AMI, use of invasive coronary intervention increased and early mortality decreased comparably between CS and NCP over time. However, CS had worse short-term and long-term survival, suggesting that continued emphasis on cancer and cardiovascular care is needed to improve outcomes.

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BOARD

SOCIETAL VALUES AND PUBLIC ENGAGEMENT

73 **The alignment of patient values with pCODR funding recommendations**

Presented By: **ZAHRA AKBAR**, Clinical Research Assistant, CADTH-pCODR

This retrospective analysis examines the alignment of patient values with pCODR funding recommendations issued between July 2011 and September 2016. The patient values listed in the pCODR Expert Review Committee (pERC) final recommendations were screened, coded and grouped according to four themes: (1) evidence of disease control; (2) improvement in the patients' quality of life; (3) decrease in side effects; and (4) limited therapeutic options. In that time, pERC issued 80 final recommendations of which 59 were positive and 21 were negative. A total of 66 drugs aligned with patient values, 11 were partially aligned, one recommendation had no patient input, and two recommendations did not comment on alignment with patient values. Generally, 56 positive recommendations aligned with patient values. One positive recommendation was partially aligned due to increased toxicities and decline in QoL, and for two a comment on alignment was not made. Of the 21 negative recommendations, ten drugs were aligned with patient values and ten were partially aligned. One negative recommendation had no patient input. pERC considered that four of the drugs reviewed aligned with patient values in the absence of disease control and improvement in QoL/side effects because of a significant lack of treatment alternatives. In cases where one of the four key themes was not listed, pERC determined that the drug partially aligned with patient values. Despite the strong alignment of patient values with positive recommendations, other considerations such as magnitude of clinical benefit and quality of evidence also informed the pERC recommendation.

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75 **Health Related Quality of Life in Adult Patients with Cutaneous T-Cell Lymphoma- a Preliminary Analysis**

Presented By: **SHAZIA HASSAN**, Research Associate, HOPE Research Centre, Sunnybrook Research Institute

Purpose: Cutaneous T-cell lymphomas (CTCL) are a group of Non-Hodgkin lymphomas primarily developing in the skin but can involve other organs. Individuals with more advanced disease can present with tumours, erythroderma, lymphadenopathy or visceral involvement. The diagnosis of CTCL can potentially have a large impact on quality of life (QoL) due to fear, uncertainty about the future, physical appearance and symptoms. Given that CTCL is currently incurable, it is important to recognize and address QoL issues. Methods: Newly diagnosed patients were recruited at the one of the two sites: Sunnybrook Health Sciences Centre and the Odette Cancer Centre. Demographic data, disease stage, and duration of symptoms were recorded. Baseline QoL scores were measured using the EQ-5D, the FACT-Lym and the Skindex-29 scales. QoL was reassessed 6 months post diagnosis. Results: Ten patients were recruited and consented to participate, and all patients completed the reassessment. 60% were male, and the average age at diagnosis was 48 years. At baseline, the majority of patients indicated that their new diagnosis had an overall minimal impact on QoL in areas such as social, emotional and physical well-being. At reassessment, 7 patients indicated they had some slight pain or discomfort. 60% of patients indicated they were slightly more concerned about their skin condition and had more anxiety about the future. Conclusions: Preliminary data suggests there is some impact on QoL 6 months post diagnosis. Complete statistical analysis will be conducted during the final analysis of the study.

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76 **Developing a KT Strategy for the Canadian Population Attributable Risk (ComPARE) project**

Presented By: **ROBERT NUTTALL**, Assistant Director, Health Policy, Canadian Cancer Society

Introduction: The Canadian Population Attributable Risk (ComPARE) project will quantify the number and proportion of new cancer cases in Canada, now and in the future (2040), that could be prevented through changes in modifiable lifestyle and environmental risk factors. The results will be directly relevant for guiding future prevention research, informing programs and advocating for new policies aimed at decreasing the burden of cancer in Canada. A built-in knowledge translation (KT) component will ensure immediate, ongoing and relevant uptake of the study results. Methods: A KT team is an integral part of the ComPARE investigative group. This team is responsible for developing and implementing a KT strategy, which guides the planning, stakeholder consultation, product development and dissemination phases. This strategy will ensure that findings from the study are disseminated in ways that reach the broadest and most relevant audiences. Outcomes: A logic model was developed to frame the strategy, capturing the inputs, activities, outputs and outcomes. A KT advisory committee composed of key stakeholders was created to consult on and participate in the knowledge translation process. This includes advising the ComPARE team of anticipated KT needs and supporting effective dissemination of study results. Workshops will provide a forum for advisory committee members to discuss strategies and best practices for KT for their regional and local networks. Anticipated KT products from the project include research publications, conference presentations, targeted webinars, media engagement, infographics and online resources. Discussion: The ComPARE project will provide the most comprehensive estimates for the current and future burden of cancer attributable to modifiable risk factors across Canada and the provinces. Taking an integrated KT strategy approach will help maximize the impact of these important findings on cancer prevention planning and decision-making in Canada.

Co-Authors: Robert Nuttall, Canadian Cancer Society; Zeinab El-Masri, Cancer Care Ontario; LEAH SMITH, Canadian Cancer Society; Prithwish De, Cancer Care Ontario; Darren Brenner, Alberta Health Services; Christine Friedenreich, Alberta Health Services

77 **Maximizing the impact of new information on the burden of cancers caused by the human papillomavirus in Canada**

Presented By: **LEAH SMITH**, Canadian Cancer Society

Introduction: Vaccines to protect against the most common types of the human papillomavirus (HPV) that cause cancer are available across Canada but access is limited for boys and vaccination rates remain low among girls. Canadian Cancer Statistics 2016 included a special report on the burden of HPV-associated cancers in Canada, including statistics on the incidence, mortality and survival of the six HPV-associated cancers. Notably, the results demonstrated a dramatic increase in the rate of HPV oropharyngeal cancers, particularly among men. The findings of the report have direct public policy relevance and the potential to improve HPV knowledge and HPV vaccination rates in Canada. Methods: To ensure study results reached the broadest and most relevant audiences and to help maximize their impact, a knowledge translation (KT) strategy was developed and executed through a coordinated effort between experts in cancer epidemiology and surveillance, communications, media relations, social media, public policy and advocacy. Select activities included developing a press release and key messages, training spokespersons, pitching to the media, coordinating media interviews and creating infographics. Dissemination channels included the media, social media, websites, emails and presentations/webinars. Indicators of the short-term effectiveness of the activities were monitored and assessed. Outcomes: Media engagement resulted in more than 230 news stories (12% French), including 152 articles, 71 radio interviews and 7 television pieces. All had a positive tone and approximately 88% included the key messages. Facebook and Twitter posts resulted in almost 400,000 social media impressions and over 5,700 engaged users. Ten presentations and webinars were given to a range of audiences, and emails were sent to over 4,000 individuals. Three of the four provinces without publicly funded HPV vaccination for boys leveraged the exposure to advocate for expansion, contributing to the recent policy change in British Columbia. Conclusion: Canadian Cancer Statistics 2016 provided new, important information on HPV-associated cancers in Canada. The integrated KT strategy facilitated dissemination of findings to the public and other key stakeholders in a meaningful way, encouraging more informed HPV vaccine decision-making.

Co-Authors: Leah Smith, Canadian Cancer Society; Monika Dixon, Canadian Cancer Society; Robert Nuttall, Canadian Cancer Society; Christine Harminc, Canadian Cancer Society

78 **Exploring the role and identity of informal support for palliative cancer patients in rural and non-rural settings: a literature review**

Presented By: **LAUREN LOVOLD**, Student, Ryerson University

Background: With continual advances in healthcare, most palliative cancer patients are able to prepare for and manage their end of life trajectory at home or in non-healthcare facilities with the assistance of informal supports. The multitude of complexities surrounding medical, physical and psychosocial needs are addressed personally by patients, and by the individuals who provide informal care for them. There is a substantial amount of literature on the needs of, and support for informal caregivers. Yet, little is known about the differences in informal support between rural and non-rural settings. Geographical isolation, healthcare provider recruitment and retention, and resource allocation differ markedly in rural settings. Such characteristics warrant distinctive considerations for rural settings in assisting informal support persons with maintaining quality of life and dignity for palliative patients at end of life. Research Question: What is known about informal support in palliative cancer patients living in rural and non-rural areas? Method: A narrative (traditional) literature review was conducted to address our research question. Some of the search criteria included publications year between 2006 and 2016, publications in English language, empirical research, Canadian settings particularly for Canadian rural settings. Findings: There is a dearth of literature that compares informal support between rural and non-rural settings for palliative cancer patients. Our findings also suggest: a) informal support plays a crucial role in the life of palliative cancer patients and these supports can be classified into four types – emotional, instrumental, tangible and medical; b) the conventional definition of informal caregiver may exclude the contribution of volunteers, who are instrumental in the care of this population in rural settings; c) differences in informal support were noted, such as the support needs of informal support persons in rural settings compared to non-rural settings regarding tangible supports. Conclusion: Future research should further examine the conceptualization and terminologies of informal support, as well, explore patterns and needs of informal support for palliative cancer patients in rural areas. Specific suggestions will be provided.

Co-Authors: Lauren Lovold, Ryerson University; Charlotte Lee, Ryerson University; Jason Wong, Southlake Stronach Regional Cancer Centre

79 **Perceptions around vascular access for intravenous systemic therapy and risk factors for lymphedema in early stage breast cancer – A patient survey**

Presented By: **SASHA MAZZARELLO**, Clinical Research Coordinator, The Ottawa Hospital Research Institute

Background: Choice of vascular access for systemic therapy administration in breast cancer remains an area of clinical equipoise and patient preference is not consistently acknowledged. A patient survey was performed to evaluate patient experience with vascular access during treatment for early stage breast cancer and to explore perceived risk factors for lymphedema. Methods: A survey of patients who had received systemic therapy for early stage breast cancer was performed at 2 Canadian cancer centers. Results: Between April and June 2016, responses were received from 187 patients (94%). Route of vascular access was peripheral (24%), PICC (42%) and PORT (34%). Anthracycline-based regimens were associated with greater use of central vascular access devices (CVAD) (86/97, 89%). Trastuzumab use was associated with greater use of PORTs (49/64, 77%). While few patients (7%) reported being involved in the decisions regarding vascular access, most were satisfied or very satisfied (88%) with their access device. Patient preference mainly centered on avoiding delays in initiation of chemotherapy. Self-reported rates of complications with peripheral IVs were; infiltration (9/44, 20%) with peripheral IVs, local skin infections with PICCs (7/77, 9%) and thrombosis with PORTs (4/62, 6%). Perceived risk factors for lymphedema included the use of the surgical arm for blood draws (117/156, 75%) and blood pressure measures (115/156, 74%). Conclusions: Most patients report being satisfied with the vascular access they received. Improved education and understanding about the evidence-based needs for vascular access is needed. Perceived risk factors for lymphedema remain variable and not evidence-based.

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80 **Optimising vascular access for patients receiving intravenous systemic therapy for early stage breast cancer – A survey of oncology nurses and physicians**

Presented By: **SASHA MAZZARELLO**, Clinical Research Coordinator, The Ottawa Hospital Research Institute

Background: Despite advances in systemic therapy choices for patients with early stage breast cancer, optimal practices for intravenous (IV) access remain unknown. This is particularly true for the use of central venous access devices (CVAD) such as PICCs and PORTs. Methods: A survey of medical oncologists and oncology nurses responsible for the care of breast cancer patients was performed in order to evaluate current practices, estimate complication rates and evaluate perceived risk factors for lymphedema. Results: Between March and June 2016, survey responses were received from 25 (30%) physicians and 57 (70%) oncology nurses. The administration of trastuzumab and/or anthracyclines was associated with a higher likelihood of recommending a CVAD. Other factors associated with the recommendation of a CVAD included prior difficult IV access and recommendations from the chemotherapy nurse. Although the perceived rates of complications associated with the use of PICCs and PORTs remained high, respondents felt that CVADs may improve patient quality of life. Reported risk factors associated with the risk of lymphedema were; axillary lymph node dissection, radiation to the axilla and line-associated infections. Factors known to be unrelated to lymphedema risk continue to be perpetuated. Conclusion: Despite widespread use of chemotherapy for patients with breast cancer, significant variability exists with respect to the type of venous access used, as well as perceptions regarding the risks of using CVADs and the risk of developing lymphedema. Further prospective studies are needed to identify the best practice strategies.

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SURVIVORSHIP

81 **Diffuse large B-cell lymphoma and other lifetime primary malignancy in the Windsor-Essex region**

Presented By: **JOSHUA KOSTA**, Medical Student, Schulich School of Medicine & Dentistry

Objectives: In light of recent findings that patients with diffuse large B-cell lymphoma (DLBCL) are at increased risk of developing subsequent primary malignancies compared to the general population, we sought to investigate whether DLBCL is correlated with development of other primary malignancy over the lifetime, either before or after the DLBCL. Methods: We constructed a database of adult patients with primary DLBCL diagnosed between February 2007 and May 2012, followed until June 2015, at the Windsor Regional Cancer Center, a single-site center located in southwestern Ontario, Canada. This database was then used to estimate incidence of other primary malignancy before and after DLBCL diagnosis in this population. Results: Among 202 DLBCL patients in the database, a total of 37 (18.3%) had a previous primary malignancy and/or developed a subsequent primary malignancy. In the 24 patients who had a primary malignancy before DLBCL, mean time between diagnoses of the first malignancy and the DLBCL was 79.9 months (range 1-374 months), and 14 patients died with mean time between DLBCL and death being 17.2 months (range 0-73 months). In the 16 patients who had DLBCL prior to another primary malignancy, mean time between diagnoses of the DLBCL and the next primary malignancy was 26.1 months (range 1-63 months), and 7 patients died with mean time between first post-DLBCL primary malignancy and death being 7.3 months (range 0-26 months). In 21 of the 38 patients a non-DLBCL hematologic cancer was present. Conclusions: Our data shows that DLBCL is associated with other primary malignancies both before and after DLBCL diagnosis. Clonal hematopoiesis may play a role in the increased risk of second and third malignancies in this population and further research in this patient population may be fruitful. Our data set also demonstrates that most patients who develop new primary malignancies post-DLBCL do so within 2 years of DLBCL diagnosis, which supports the current practice of discharging patients with DLBCL 2 years after their initial diagnosis.

Co-Authors: Joshua Kosta, Schulich School of Medicine & Dentistry; Caroline Hamm, Windsor Cancer Research Group; Ryan Chan, University of Toronto; Justin Tong, Schulich School of Medicine & Dentistry

82 **Development and Evaluation of a Branching Logic Survey for Screening and Evaluating Physical Function in Cancer Survivors**

Presented By: **MINDY LIAN**, Clinical Research Study Assistant, Princess Margaret Cancer Centre

Background: Capturing physical function (PF) impairments systematically in cancer outpatients can promote health care and research. Research-focused tools such as the HAQ-DI and WHODAS surveys are long and difficult to apply in the outpatient setting. We first developed a Branching Logic Electronic Symptom Survey (BLESS) that utilizes screening questions, followed by subsequent follow-up questions to reduce the number of question burden. We then tested the acceptability of BLESS in a prospective comparison with the full HAQ-DI/WHODAS surveys. Methods: Cancer outpatients, across all disease sites at Princess Margaret Cancer Centre, were evaluated using HAQ-DI/WHODAS surveys and patient-reported ECOG performance status scores. BLESS was developed using several key questions from these surveys to screen for potential physical dysfunction, followed by more extensive questions from HAQ-DI/WHODAS when the screening questions were positive. Sensitivity/specificity of screeners for subsequent individual HAQ-DI/WHODAS questions were assessed. A separate set of cancer outpatients were alternately evaluated for PF using either HAQ-DI/WHODAS versus BLESS; survey completion times, and willingness to use the tool on a regular basis was assessed. Results: Sensitivity/Specificity of BLESS was assessed in 409 patients. Median number of questions dropped from 32 (HAQ-DI/WHODAS) to 9 (BLESS). The sensitivity of the three BLESS screening questions for the individual HAQ-DI/WHODAS questions ranged from 82.9% to 100%. Specificity ranged from 58.9-75.4%. Once several questions were moved from the list of follow-up questions to screening questions, the minimum sensitivity rose to 92%. Patients found BLESS substantially shorter to complete than HAQ-DI/WHODAS (median completion time reduction of 3.9 minutes; 32% decrease; p. Conclusion: BLESS is a relevant, less burdensome tool for evaluating PF in cancer patient management. Implementation into clinical practice may allow rapid identification of patients requiring physiotherapy, occupational therapy, or other ancillary health care support.

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83 **Do Male and Female Patients Derive Similar Survival Benefits from Contemporary Systemic Cancer Therapies? A Systematic Review and Meta-Analysis**

Presented By: **ERICA MCDONALD**, Cancer Research Assistant, Sunnybrook Health Sciences Centre

Background: It is unclear if the differences in pharmacological effects from cancer drugs between males and females patients translate to clinically significant differences in outcomes. Thus, we aim to examine if biological sex has an effect on the relative survival benefit that patients in clinical trials derive from contemporary systemic cancer therapies. Methods: A systematic review identifying randomized control trials (RCTs) cited by the Food and Drug Administration, Health Canada, and the European Medicines Agency between 2006 and August 2015 was performed. Primary publications with overall survival and/or progression free survival (OS/PFS) as their primary endpoint were included for analysis. Two independent reviewers extracted male and female OS and/or PFS hazard ratios (HRs) and associated confidence intervals (CIs). A meta-analysis, using an inverse variance random effects model, was conducted to determine if the relative survival benefits of contemporary systemic cancer therapy between males and females differ. Sensitivity analyses were performed specific to cancer type, primary endpoint, and type of systemic treatment. Results: Fifty-eight RCTs, involving 36,905 patients, met all inclusion criteria and were included for analysis. The pooled HRs were 0.64 (95% CI 0.59-0.70) and 0.61 (95% CI 0.55-0.67) for males and females respectively. No statistical difference was found between male and female patient groups (p= 0.38). All additional sensitivity analyses completed based on drug type, cancer site, and endpoint (PFS or OS) yielded similar conclusions (p= 0.15-0.99). Toxicity and quality of life (QoL) analyses based on biological sex subgroups were not reported in any included RCT. Conclusion: Regardless of one's biological sex, all patients appear to derive similar relative survival benefits from selected contemporary systemic cancer therapies. Future study should focus on the analysis and reporting of biological sex-based toxicity and QoL subgroup analyses to allow a more comprehensive understanding of the overall net clinical benefit males and females may derive from systemic cancer therapies.

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84 **Development of a Standardized Survivorship Cohort in Ontario**

Presented By: **STEFANIE DE ROSSI**, Senior Specialist, Survivorship, Cancer Care Ontario

Background: The number of cancer survivors in Ontario is increasing, and there is a need to better understand the volume and demographics of this population in order to plan for high-quality follow-up care services. To produce accurate and timely information on the Ontario cancer survivor population, a prospective, cumulative cohort has been developed using administrative data. Methods: We created a comprehensive cohort of long-standing and recent survivors of cancer by combining data from the Ontario Cancer Registry, which contains data from 1964 to 2016, and other administrative and clinical data sources. Clinical concepts of survivorship and treatment were translated into technical definitions through clinical expert consensus on treatment procedure codes, inclusion/exclusion and censoring criteria. A method for ascertaining survivors was selected following the review of analyses on the last date of treatment for cancer patients (including surgery, radiation, and chemotherapy). Results: The standardized survivorship cohort captures all Ontario survivors of cancer, of any disease type. This cohort will be used to produce descriptive analyses on the age, sex, location and length of survivorship of living cancer survivors in Ontario. Conclusions: The standardized cancer survivor cohort has provided, for the first time, a comprehensive picture of the volume and demographics of cancer survivors in Ontario. Data on this cohort will be used in cancer system resource planning. The cohort will also be used to increase our understanding of the type and quality of follow-up care this population is currently receiving. Potential gaps in follow-up care, such as under- and over-surveillance testing for recurrence, will be explored in support of the development and evaluation of a project aiming to improve the quality of care for cancer survivors in Ontario.

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85 **The impact of falls in older cancer patients**

Presented By: **SCHRODER SATTAR**, Doctoral Student, University of Toronto

Background: Falls are a major health issue among older adults. Cancer and its treatment can heighten their risks for falls and fall-related injuries. However, little is known about circumstances of falls, how falls are assessed in oncology clinics, and how falls impact cancer treatment in older cancer patients. The purpose of this study is to address these important gaps in geriatric oncology. Methods/Overview: This is an embedded mixed-methods cross-sectional study recruiting community-dwelling older cancer patients at the Princess Margaret Hospital in Toronto who have experienced ? one fall within the past 12 months. Data collection includes self-reported survey supplemented by chart review and oncologist survey. Results: To date, 35 older patients have participated. The median age is 78 (range 66-92). Thirty (86%) are male. Five participants (14%) live alone. Twenty-three (66%) have ? one functional limitation. Nineteen (54%) use a walking aid. Eight (23%) have peripheral neuropathies. The most common diagnoses are prostate and hematological cancers. Eighteen (51%) experienced ? one fall. Injurious fall rate is 54%. Injuries reported include bruise/abrasion, bleeding, broken nose/tooth, and rib/hip fractures. The most common fall locations are staircase, sidewalk curb, and washroom. So far, no impact on cancer treatment by falls has been identified by patients or oncologists. Half the participants did not report falls to their oncologists; of those who did, few were assessed. Nearly half the participants express high concerns about falling. Conclusions: Falls are uncommonly reported by older cancer patients, are rarely assessed by oncologists, and do not affect cancer treatment. More work needs to be done to assess whether cancer treatments are associated with falls risk.

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86 **Development Process of a Fertility Decision Aid for Young Canadians Diagnosed with Breast Cancer to Improve Decision-Making**

Presented By: **BRITTANY SPELLER**, Graduate Student, University of Toronto

Background: Young women (45 years of age or younger) diagnosed with breast cancer are at risk of treatment-related infertility. Even with established fertility preservation options available in Canada, women feel as though they have limited support and access to resources. We aim to develop a Canadian decision aid to assist young women in making fertility preservation decisions prior to breast cancer treatment. Methods: The Ottawa Decision Support Framework and International Patient Decision Aids Standards criteria guided development. The development process relied on end-user input (breast cancer survivors, multi-disciplinary healthcare providers, advocacy groups and cancer organizations) and consisted of 6 steps: (1) Systematic reviews on (a) existing fertility decision support resources (b) barriers and facilitators to fertility decision-making; (2) Needs assessment (a) semi-structured interviews with end-users to identify Canada specific barriers and facilitators to fertility decision-making (b) structure interviews with end-users to evaluate existing decision support resources; (3) Initial prototype development and content expert review; (4) End-user engagement at a one-day meeting; (5) Development of an online decision aid; (6) Final usability and acceptability testing prior to pilot testing across Canada. Results: The decision aid is formatted as a paper and online tool. The contents include an introduction orienting the reader, background on breast cancer and fertility, detailed information on the most common fertility options in Canada, weighted scale values clarifying exercise, question list, next steps, additional resources for before and after treatment, glossary, and reference list. The decision aid has been reviewed and revised by survivors and content experts prior to final development. Subsequent usability and acceptability testing of the paper and online tool will be completed prior to pilot testing across Canada. Conclusion: The Canadian fertility decision aid was systematically developed with the support and positive contributions from end-users. Survivors' indication of need for this decision aid reflects the importance of providing fertility information prior to treatment. There is an opportunity to use this decision aid to empower young women in Canada to participate in fertility decision-making and improve the care experience.

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87 **Isoflavone and lignan intake among breast cancer patients and differences by menopausal status**

Presented By: **BEATRICE BOUCHER**, Staff Scientist, Cancer Care Ontario

Keywords: isoflavones; lignans; breast cancer prognosis; Ontario Cancer Registry; opt-out recruitment. Background: Isoflavones and lignans are phytoestrogens - dietary components with estrogen-like structures that exert potential anti-carcinogenic effects. Few studies have examined intake among breast cancer patients despite suggestions of reduced breast cancer recurrence and mortality that may vary by menopausal status. Purpose: To examine isoflavone and lignan intake among recently diagnosed breast cancer patients, given possible associations with survival. Methods: The Ontario Cancer Registry (OCR) was used to identify breast cancer patients aged 25-74 years, with pathology report confirmation. OCR staff at Cancer Care Ontario mailed study information letters to 462 patients and requested notification within 4 weeks if they wished to opt-out of contact by study staff. 90% of patients (n=417) did not opt-out, and were mailed questionnaires querying intake in previous 2 months of 17 soy (isoflavone) and 3 high lignan foods (flaxseed, flaxseed bread, sesame seeds). Geometric mean and median phytoestrogen intakes, and differences by type and menopausal status were estimated among all patients and among consumers only. Results: 278 of 417 patients completed questionnaires about 2 months after diagnosis (67% response). Foods were similarly consumed by menopausal status; isoflavone intake was low among all patients (median 56 µg/day). Consumers (n=219) had higher phytoestrogen intakes (e.g. median isoflavones 1808 µg/day); 7-26% of consumers had intakes >10 mg/day. Among patients who consumed any phytoestrogens, intakes were higher among premenopausal than postmenopausal women, particularly for lignans, although differences were not statistically significant (e.g. median lignans 4375 vs 1863 µg/day; p=0.07). Lignan intake was significantly higher than isoflavones among all patients and among consumers. Conclusions: Findings suggest lignan intake from 3 high content foods may be considerable and warrants attention in future studies of prognosis, especially among premenopausal women.

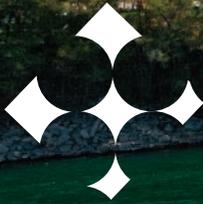
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88 **Examining the Effect of a Group Psychoeducational Intervention for Cancer-Related Cognitive Dysfunction: A Pilot Study**

Presented By: **KOMAL SHAIKH**, PhD Candidate, York University

Background. Cancer-related cognitive dysfunction (CRCDD) refers to the cognitive difficulties (such as concentration and memory) experienced by patients following cancer or its treatment, even in patients who do not receive central nervous system directed therapy. CRCDD affects a subset of breast cancer survivors, and it can have a detrimental impact on quality of life (QoL). Methods. This study aimed to explore the feasibility and efficacy of a psychoeducational intervention designed to help participants manage CRCDD symptoms and improve QoL. Seven women (aged 42-67, M = 54.4) who completed chemotherapy at least 1 year before and had complaints regarding cognitive functioning were recruited to participate in a psychoeducational group program consisting of 2-hour sessions once a week for 5 weeks. Participants received information about CRCDD, the factors that impact it (e.g., stress, anxiety, lifestyle practices) and strategies that can improve those factors and potentially reduce CRCDD symptoms. Questionnaires assessing subjective cognitive deficits and the negative impact of these deficits (Functional Assessment of Cancer Treatment – Cognition 3, FACT-Cog3), subjective memory ability (Multifactorial Memory Questionnaire, MMQ) and quality of life (Illness Intrusiveness Rating Scale, IIRS) were administered before the first session and immediately after the last session. Results. Six of seven participants adhered to the intervention, as indicated by their high attendance and participation in homework activities. Post-intervention assessment demonstrated improvements in the Perceived Cognitive Impairment and Impact on Quality of Life FACT-Cog subscales, and the FACT-Cog total (all ps < .05). Finally, participants showed improved scores on the Ability Scale of the MMQ, p. Conclusions. Despite the small sample, our results suggest feasibility and preliminary efficacy of this intervention. Further evaluation of this psychoeducational program using a randomized controlled design with waitlisted control is planned.

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