



CCO RESEARCH DAY 2018: ABSTRACTS



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IMPACT OF A COMPREHENSIVE WORKPLACE HEALTH PROMOTION PROGRAM ON EMPLOYEE HEALTH BEHAVIOURS THREE YEARS AFTER PROGRAM IMPLEMENTATION

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Purpose: To measure the impact of CCO's comprehensive workplace health promotion program, Health Works, on employees' health behaviours and knowledge through a follow-up survey.

Methods: Online survey questionnaires were completed by CCO employees, in 2014, 2015 and 2017. For each questionnaire, three reminder emails were sent. Linked and overall data were examined for current health behaviours, and in order to measure changes in employee behaviours and knowledge between years.

Results: 677 employees (62.2%) responded in 2017, 302 of whom completed the survey in 2015, 221 in 2014. CCO employees are maintaining the health benefits gained in the first year of program implementation. Employees sit less at work ($p < 0.0001$) and are more active to, from and at work ($p = 0.01$). Since implementation of healthy eating initiatives in 2015, no changes were seen in vegetable ($p = 0.15$) and fruit consumption ($p = 0.33$) patterns. Ergonomic issues continue to be of concern for CCO employees, with 42% of respondents indicating they had pain or physical symptoms at the end of the work day. Health Works is regarded positively, with 94% of respondents agreeing/strongly agreeing it is a valuable program.

Conclusions: Since program implementation, employees have significantly reduced sedentary behaviours and increased physical activity, to from or at work. Employees view Health Works as a positive initiative to have in the workplace to improve health and well-being.

Keywords: chronic disease prevention; workplace health; health promotion; physical activity; healthy eating

Themes: Prevention of Chronic Disease; Population Health

SYMPTOM BURDEN IN THE FIRST YEAR AFTER CANCER DIAGNOSIS: AN ANALYSIS OF 729,861 PATIENT-REPORTED OUTCOMES

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Purpose: Cancer patients experience considerable symptom burden over all phases of their disease course, yet most research fails to incorporate patient-reported outcomes (PROs) as an important assessment of care. This study proposes to use the Edmonton Symptom Assessment System (ESAS) to quantify 9 cancer-related symptoms among cancer populations in Ontario and to determine predictors of high symptom burden.

Methods: This retrospective cohort study used linked PRO data with administrative datasets and included patients diagnosed with the following cancers 2007-2014: Oropharynx, Gastrointestinal tract, Thorax, Breast, Gynecological system, Genitourinary system, Nervous system and Orbit, and Hematologic and Lymphatic systems. ESAS scores were categorized as ≥ 4 and < 4 . Figures present the proportion of scores ≥ 4 in the 12 months following diagnosis for cancers combined. A multivariable regression model was used to model the odds of reporting an ESAS score ≥ 4 in patients who survived one year.

Results: 120,679 cancer cases were identified during the study period with at least 1 ESAS assessment within the 12 months following diagnosis. Patients reported a median of 4 ESAS assessments. Tiredness was the most prevalent symptom, followed by wellbeing and anxiety. Predictors of high ESAS scores for all symptoms included: comorbidities, female sex, time to diagnosis, cancer type, age, and income.

Conclusions: This study demonstrates a high symptom burden in all cancer patients across Ontario. Knowledge of specific symptom trajectories identifies areas for more targeted research to determine modifiable predictors of symptoms. Furthermore, identifying patients at risk for high symptom burden may result in more targeted care.

Keywords: symptom screening; Edmonton Symptom Assessment System; cancer

Themes: Person-Centred Care; Population Health

EVALUATING POST-TREATMENT OUTCOMES: THE IMPACT OF PET/CT IN STAGING AGGRESSIVE LYMPHOMA

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Purpose: PET/CT upstages ~25% of aggressive non-Hodgkin's and Hodgkin's lymphoma patients (NHL and HL) from presumed limited-stage to advanced-stage disease, compared to CT, suggesting that patients staged with CT alone may be under-treated. Direct links from imaging to patient outcome are challenging and understudied; this study used system-level data to assess whether the use of PET/CT influences patient outcome for limited-stage NHL and HL.

Methods: A PET cohort was derived from limited-stage NHL or HL patients having PET/CT through the Ontario PET Registry between May 2013 and April 2016. A control pool was derived from the Ontario Cancer Registry (OCR) for patients diagnosed between January 2010 and April 2013. Administrative data sources were used to obtain and control for baseline characteristics, including first-line treatment (FLT). The outcomes of interest were time to death and time to second-line treatment initiation after the end of FLT. Outcomes were assessed using adjusted Cox proportional hazards regression and propensity score matching.

Results: Survival was higher for patients with limited-stage NHL as determined by PET/CT compared to those with apparent limited-stage by CT (hazard ratio [95%CI] = 0.40[0.21,0.74]). No other significant associations were observed.

Conclusions: Patients with limited-stage NHL as determined by PET/CT treated with curative intent therapy had significantly lower 1-year mortality compared to those with limited-stage NHL as determined by CT, likely due to more accurate staging. No differences in outcome were seen for HL, potentially attributed to differences in expected time to failure. System-level data can be used to evaluate the impact of changes in care.

Keywords: aggressive lymphoma; treatment outcomes; PET/CT; propensity score matching; Cox regression

Themes: Health System Improvements & Innovations; Health Services Delivery; Best Evidence

DISPARITIES IN BREAST CANCER DIAGNOSIS FOR IMMIGRANT WOMEN IN ONTARIO AND BC: RESULTS FROM THE CanIMPACT STUDY

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Purpose: We compared stage of diagnosis, proportion of screen-detected breast cancers, and length of diagnostic interval for immigrant women versus long-term residents of BC and Ontario.

Methods: We conducted a retrospective cohort study using linked administrative databases in BC and Ontario. We identified all women residing in both provinces who were diagnosed with incident invasive breast cancer between 2007 and 2011, and determined who was foreign-born using the Immigration Refugee and Citizenship Canada database. We used descriptive statistics and bivariate analyses to describe the sample and study outcomes. We conducted multivariate analyses (modified Poisson regression and quantile regression) to control for potential confounders.

Results: There were 14,198 BC women and 46,952 Ontario women included in the study population; 11.8% and 11.7% were foreign-born respectively. In both provinces, immigrant women were significantly less likely to have a screen-detected breast cancer and had a significantly longer median diagnostic interval than long-term residents. Women from East Asia and the Pacific were less likely to have a screen-detected cancer and had a longer diagnostic interval, but were diagnosed at an earlier stage than long-term residents. In Ontario, women from Latin America and the Caribbean and from South Asia were less likely to have a screen-detected cancer, had a longer median diagnostic interval, and were diagnosed at a later stage than long-term residents. These findings were not associated with access to primary care.

Conclusions: There are inequalities in breast cancer diagnosis for Canadian immigrant women despite similar use of primary care.

Keywords: cancer screening; immigrant health; breast cancer; diagnosis

Themes: Prevention of Chronic Disease; Integrated Care; Health System Improvements & Innovations; Population Health; Health Services Delivery

PROVINCIAL ADOPTION OF A PROSTATE CANCER PATIENT-REPORTED OUTCOME (PRO) TOOL: RESULTS AND LESSONS LEARNED FROM A STAGGERED IMPLEMENTATION AND EVALUATION

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Purpose: The Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP) is being implemented across Ontario Regional Cancer Programs (RCPs) using a staggered approach. This enables a parallel staggered formative and summative evaluation, where lessons learned from early implementers informs improvements in both evaluated regions and those preparing to implement. The purpose is to report formative evaluation results (early implementers) and lessons learned from this approach.

Methods: Questionnaires were developed to capture patient and provider experiences with EPIC-CP, and refined following cognitive testing and review of mock data. Participants from three RCPs (early implementers) completed questionnaires. Evaluation challenges and strategies were discussed through regular communication with RCPs. Lessons learned from early implementers informed the design and execution for subsequent implementers.

Results: Participants included providers (n=25) and patients (n=135). Providers reported challenges with data flow (26% reported timely receipt of EPIC-CP results for clinical use) and symptom management (28% reported low confidence in treating sexual function). 86% of patients reported that EPIC-CP improved symptom communication with providers; 65% reported sufficient support to complete it and 18% reported being uncertain whether their care team looks at results. RCPs reported challenges with participant recruitment.

Conclusions: Results highlight improvement opportunities, specifically, infrastructure to support data flow, symptom management resources and provider education, and patient support to complete EPIC-CP. Refinements were made to condense questionnaires and participant recruitment strategies were introduced for subsequent implementers. A staggered evaluation can facilitate timely improvements for both current and later implementers.

Keywords: PROs; person-centred; EPIC; implementation; evaluation

Themes: Person-Centred Care; Health System Improvements & Innovations; Health Services Delivery

BEARING THE FINANCIAL BURDEN OF CANCER CARE: FINANCIAL TOXICITY IN A PUBLIC PAYER SYSTEM

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Purpose: In contemporary cancer care, financial distress is increasingly recognized as a clinically relevant patient-reported outcome. This study uses the validated Comprehensive Score for Financial Toxicity (COST) instrument to assess financial toxicity (FT) in advanced cancer patients.

Methods: Patients with lung or renal cell cancer were recruited from outpatient clinics at the Princess Margaret Hospital. FT was measured with COST, an 11-item survey scored from 0-44 with lower scores reflecting worse financial well-being. Data on patient characteristics, out-of-pocket costs (OOP) and extended insurance coverage (EIC) was collected. Associations between variables and COST score (COST) was evaluated using multivariable analyses.

Results: One-hundred and seventy-seven patients were approached, of whom 136 (77%) agreed to participate (45% male, median age 63 yrs). Median COST was 21 (range: 2-44). COST was correlated with age (correlation coefficient [r] = 0.42; P<0.0001), with younger patients reporting greater FT (P<0.0001). Employed patients or those receiving pension income reported less FT than unemployed patients (26.5 vs. 21.5 vs. 17.0, respectively; P=0.0003). Less FT occurred in patients with EIC, compared to those without EIC (P=0.03). Patients with higher OOP reported more FT (P=0.0004). In linear regression analysis, only age was a predictor of FT, when adjusting for income and employment status (for every 10-yr age increase, COST improved by 4.2; P<0.0001).

Conclusions: Age is a predictor of FT when adjusting for income and employment status, with younger patients reporting greater financial distress. This study highlights priority patient populations where FT should be a significant patient-reported outcome to routinely assess.

Keywords: financial toxicity; patient-reported outcome

Themes: Health System Improvements & Innovations; Health Services Delivery

UNDER/NEVER SCREENED (UNS) PILOT INTERVENTIONS: ASSESSING THEIR IMPACT ON SCREENING PARTICIPATION AMONG FIRST NATIONS, INUIT AND MÉTIS POPULATIONS

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Purpose: From 2011-2014, Cancer Care Ontario (CCO) funded five Regional Cancer Programs to develop pilot projects in partnership with 'under and never screened' (UNS) populations; of these, four regions identified First Nations, Inuit and Métis (FNIM) populations as priority partners. This study describes the interventions that focused on FNIM populations in the pilot and evaluates impact on FNIM cancer screening participation.

Methods: Using standardized intervention framework data reported by the pilot teams, FNIM-focused interventions were described by audience, fiscal year, screening program and intervention type across the regions. A sub-sample of analyzable FN communities was selected based on postal code geography; communities were identified as an "intervention" or "control" community. Using CCO's administrative data holdings, crude screening participation rates were calculated before and after UNS interventions for each community by cancer screening program. Differences in screening rates between intervention and control communities before and after the introduction of UNS interventions were modelled using Poisson regression, controlling for age, sex, co-morbidity, receipt of CCO correspondence, remoteness.

Results: Though the UNS interventions did not significantly improve cancer screening participation rates among FN communities in the three screening programs over the study period there, an equally important and significant result was the development and improvement in the relationships between FNIM communities and the cancer screening teams.

Conclusions: The pilot interventions did not significantly improve screening participation, but they were instrumental in relationship building. These relationships and key learnings from the pilots are anticipated to facilitate effective analysis and work with regional UNS populations in the future.

Keywords: FNIM; cancer screening; under/never screened; equity

Themes: Person-Centred Care; Health System Improvements & Innovations; Equity; Population Health

P01

CANCER RISK FACTORS ATLAS OF ONTARIO: LOCAL ESTIMATES OF BEHAVIOURAL RISK FACTORS FOR CANCER

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Purpose: To provide the aim, methods, results and utility of the *Cancer Risk Factors Atlas of Ontario*.

Methods: Six consistently surveyed behavioural risk factors for cancer across multiple cycles of the Canadian Community Health Survey (share file) were geographically coded to local areas (census dissemination areas) and combined to increase the observations per area. The observations were fit to a Bayesian hierarchical model to obtain descriptive, area-based prevalence estimates related to alcohol, excess body weight, physical inactivity, inadequate vegetable and fruit consumption, sedentary behaviour, and tobacco smoking. In consideration of the complex survey design, we implemented a post-stratification approach as described in our peer reviewed publication (bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-3144-4). The estimates were checked for validity and sensitivity to priors.

Results: The local area model estimates aggregated to health regions were consistent with estimates provided by Statistics Canada methods ("bootvar") for these large regions, and were not sensitive to choice of prior. The model estimates were mapped by local areas and provided in atlas format. Priority areas were identified using posterior probabilities computed for the local area prevalence estimates compared to Ontario estimates. The digital data are available for health promotion, research and investigation.

Conclusions: Complex sample survey data provide a useful resource to estimate the prevalence of risk factors relevant to chronic disease. Identification and communication of priority areas is important to guide use of limited health promotion and planning resources.

Keywords: behavioural risk factors; cancer prevention; modeling survey data

Themes: Prevention of Chronic Disease; Population Health

P02

BURDEN OF CANCER CAUSED BY INFECTIONS IN ONTARIO

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Purpose: To describe Cancer Care Ontario's report, *Burden of Cancer Caused by Infections in Ontario*, which quantifies the cancer burden attributable to infections in Ontario, and outlines cancer prevention opportunities.

Methods: Population attributable fractions (PAFs) were calculated for 7 cancer causing infections found in Ontario: human papillomavirus (HPV), *Helicobacter pylori* (*H. pylori*), hepatitis C virus (HCV), Epstein-Barr virus, hepatitis B virus (HBV), human herpesvirus 8, human T-cell lymphotropic virus, type 1, and their associated cancers. PAF inputs included representative prevalence estimates for each infection in the population (or among cancer cases) and relative risks for a given infection and cancer type. To account for uncertainty, plausible ranges were calculated around each PAF estimate. Attributable cases were determined by applying PAF estimates to 2013 incidence data from the Ontario Cancer Registry.

Results: In 2013, approximately 3,100 (plausible range 2,443 to 3,591) new cancer cases in Ontario were attributed to infections, which is roughly 4 percent of all new cancers and 32 percent of the 15 cancer types known to be associated with one or more of the 7 infections. Over 90 percent of the cancer burden attributable to infections was due to HPV, *H. pylori*, HCV and HBV, which have known means of prevention and/or treatment.

Conclusions: Our results suggest identifiable opportunities to decrease the cancer burden attributable to infections in Ontario.

Keywords: prevention; infections; cancer

Themes: Prevention of Chronic Disease; Population Health

P03

IMPACT OF IMMIGRATION STATUS ON HEALTH BEHAVIORS AND PERCEPTIONS IN CANCER SURVIVORS IN ONTARIO

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Purpose: Health behaviors including smoking cessation, physical activity (PA), and alcohol moderation are key aspects of cancer survivorship. To better understand any health behavior disparities between immigrant and native-born cancer survivors, we compared the health behaviors and perceptions about these behaviors between these two groups.

Methods: Adult cancer patients from Princess Margaret Cancer Centre (Toronto, Canada) were surveyed on their smoking, PA, and alcohol habits and perceptions of the effects of these behaviors on quality of life (QoL), 5-year survival, and fatigue. Multivariable models evaluated the effect of immigration status on behaviors and perceptions.

Results: Of 1275 patients, 27% self-identified as foreign-born. At 1 year before diagnosis (baseline), 17% smoked, 69% were physically inactive, and 58% consumed alcohol. Although immigration status was not associated with smoking at baseline ($P > 0.05$), immigrants were less likely to perceive that smoking was harmful on QoL (adjusted odds ratio [aOR] 0.58, $P = 0.008$), survival (aOR 0.56, $P = 0.002$), and less so for fatigue (aOR 0.75, $P = 0.11$). Immigrants were less likely to meet PA guidelines at baseline (aOR = 0.70, $P = 0.08$), and perceive that PA improved fatigue (aOR 0.62, $P = 0.04$) and survival (aOR 0.64, $P = 0.08$). Immigrants were less likely to drink alcohol at baseline (aOR = 0.47, $P = 0.001$), but alcohol perceptions did not differ between immigrants and native-born.

Conclusions: Immigrants were less likely to perceive continued smoking as harmful and less likely to be aware of the benefits of PA. Culturally tailored counselling should be considered for immigrants who smoke or are physically inactive.

Keywords: disparities; health behaviors; cancer survivorship

Themes: Prevention of Chronic Disease; Health System Improvements & Innovations; Population Health; Health Services Delivery

P04

MAXIMIZING RESEARCH IMPACT ON CANCER PREVENTION: AN INTEGRATED KNOWLEDGE TRANSLATION APPROACH FOR THE CANADIAN POPULATION ATTRIBUTABLE RISK (ComPARE) STUDY

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Purpose: To develop a knowledge translation (KT) strategy to enhance the utility of results from the Canadian Population Attributable Risk (ComPARE) study, which has the potential to have a major impact on cancer control and prevention in Canada.

Methods: The aim of ComPARE is to estimate the number and proportion of incident cancers in Canada, now and to 2040, that could be prevented through changes in modifiable lifestyle and environmental exposures. KT leads among ComPARE investigators, including Canadian researchers and the Canadian Cancer Society (CCS), developed a KT strategy to maximize the relevance and uptake of the results. The strategy is divided into four phases: planning, knowledge product development, dissemination, and evaluation, with knowledge user engagement built in throughout.

Results: A logic model was developed to map out the KT activities. Next, an Advisory Committee of key stakeholders from across Canada was formed as a mechanism for engaging knowledge users. Knowledge product development is underway, including an interactive data dashboard to house all ComPARE results and a toolkit to enable stakeholders to develop customized KT strategies. Anticipated dissemination activities include conference presentations, social media, and targeted webinars.

Conclusions: Through an integrated KT approach, the expertise of the key mobilizers (CSS) and the producers (researchers) of knowledge were brought together. The development of an Advisory Committee allows for meaningful engagement of knowledge users. The KT strategy, developed and refined collaboratively, is expected to greatly enhance the impact of ComPARE results on cancer prevention planning and decision-making in Canada.

Keywords: cancer prevention; attributable risk; knowledge translation

Themes: Prevention of Chronic Disease; Population Health

P05 – EQUITY POSTER WALK

PROVINCE-WIDE SEVERITY OF SYMPTOM BURDEN AMONG CANCER OUTPATIENTS IN THE LAST 6 MONTHS OF LIFE

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Purpose: As part of a provincial initiative, all Ontario RCCs systematically collect patient-reported symptom data. We undertook a comprehensive analysis of risk-factors for symptom burden in cancer patients in the last six months of life.

Methods: A cohort of patients who were diagnosed and died with cancers of the lung, colon and rectum, pancreas, bladder, brain, stomach, kidney, and esophagus in Ontario between January 2010 and December 2016. Patients registered at a RCC were included. Patient-reported scores for anxiety, depression, appetite, nausea, dyspnea, tiredness, fatigue, pain, and wellbeing were prospectively collected and linked to administrative healthcare databases. Multivariable modified Poisson regression models were used to identify risk factors for severe symptom scores.

Results: 22,650 of 39,084 patients (58%) had at least one symptom assessment recorded in the six months before death. Severe scores were more likely to occur closer to death. Variation in symptom severity was evident by primary cancer site, age, material deprivation index, rurality, and immigration status. For all symptoms, individuals living in areas in the highest quintile of material deprivation had significantly higher risk of severe scores, compared to those living in areas in the lowest quintile of material deprivation. Individuals who immigrated to Canada were significantly more likely to report severe depression, appetite, nausea, pain, tiredness, and overall wellbeing scores, than longer-term residents.

Conclusions: In this cohort of cancer decedents, risk of severe symptom scores is associated with disease site as well as demographic factors including material deprivation and immigrant status. At-risk groups may benefit from targeted supportive care interventions.

Keywords: patient-reported outcomes; symptoms; end-of-life

Themes: Person-Centred Care; Population Health

P06

VARIATIONS IN SMOKING CESSATION ACTIVITIES AT REGIONAL CANCER CENTRES BY PATIENT CHARACTERISTICS

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Purpose: To examine variations in Tobacco Screening and Accepted a Smoking Cessation (SC) Referral rates among new cancer patients, by patient characteristics, in SC programs at Regional Cancer Centres (RCCs).

Methods: A descriptive analysis was conducted on data submitted to Cancer Care Ontario from 14 RCCs of their SC activities among new ambulatory cancer patients in 2016/17 (April 2016 - March 2017). Data were aggregated and cleaned resulting in 64,409 patient records, and two SC performance indicators (Tobacco Screening and Accepted a SC Referral) were calculated by sex, eight age groups and 26 cancer types.

Results: Across Ontario in 2016/17, the Tobacco Screening rate among new cancer patients was 65.0%, and 21.6% of tobacco users accepted a SC referral. The Tobacco Screening rate was 65.5% for males and 64.5% for females, and ranged from 58.8% (ages 29 and under) to 66.5% (ages 50 -59) by age groups for both sexes combined. Patients with testicular cancer had the highest Tobacco Screening rate (73.7%) and those with leukemia had the lowest (51.4%). The Accepted a SC Referral rate was 20.8% for males and 22.6% for females, and by age groups ranged from 5.0% (ages 90 and older) to 25.3% (ages 50 -59) for both sexes combined. Tobacco users with laryngeal cancer had the highest Acceptance of SC Referrals (37.6%) and those with testicular cancer had the lowest (11.7%).

Conclusions: In Ontario, Tobacco Screening and Accepted a SC Referral rates at RCCs showed little variation by sex and age groups, though larger variations were observed by cancer type.

Keywords: RCCs; smoking cessation; patient characteristics

Themes: Health System Improvements & Innovations; Population Health; Health Services Delivery

P07

BETTER HEALTH DURHAM: COMMUNITY ENGAGEMENT IN A CLUSTER RCT OF A PREVENTION PRACTITIONER INTERVENTION IN LOW-INCOME NEIGHBOURHOODS

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Purpose: The Building on Existing Tools to Improve Chronic Disease Prevention and Screening (BETTER) intervention has improved uptake of chronic disease prevention and screening activities in primary care. The BETTER intervention consists of 1:1 visits between prevention practitioners (PPs) and patients (40-65 years). It is unknown if an adapted BETTER could be effective in the community with public health nurses as PPs. The presentation objective is to describe community engagement strategies in a cluster RCT in low income neighbourhoods with low cancer screening rates and low uptake of primary care.

Methods: Principles of community-based participatory research were used to design the community engagement strategy in Durham Region, Ontario. Key elements included close collaboration with public health partners to identify stakeholders and creating a community advisory committee (CAC) and a primary care engagement group to provide advice.

Results: We identified 15 community stakeholder groups (~47 subgroups) including service organizations, faith groups, and charitable organizations representing diverse constituents. Community outreach activities included in-person meetings and information displays at local events. The CAC is comprised of members of the public and representatives from primary care, social services, and community organizations. The CAC and primary care engagement groups have provided advice on trial recruitment strategies and on the design of the PP visit.

Conclusions: The partnership between public health, primary care, and the study team has been crucial to connect with community stakeholders. We anticipate that community engagement will be important in raising awareness about the study and will contribute to successful recruitment.

Keywords: chronic disease prevention and screening; public health; prevention practitioner; community engagement

Themes: Prevention of Chronic Disease; Population Health

P08

TOBACCO USE AND SMOKING CESSATION IN ONTARIO SUB-POPULATIONS: RESULTS FROM THE PREVENTION SYSTEM QUALITY INDEX HEALTH EQUITY REPORT

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Purpose: Ontarians facing health inequities have higher rates of some cancer risk factors, are more likely to get certain cancers and are less likely to survive them. *Prevention System Quality Index: Health Equity* reports on opportunities to reduce cancer risk factors in populations facing health inequities. As part of this report, tobacco use was estimated in sub-populations in Ontario.

Methods: Indicators were developed to measure current smoking, quit attempts and long-term smoking cessation and were analyzed according to socio-demographic factors that can impact health. Data from the 2010-2014 Canadian Community Health Survey were used and estimates were age-standardized to the 2011 Canadian population.

Results: Many sub-populations continue to smoke at higher rates than the rest of the population and are less likely to quit. Inverse gradients were seen for income and education, with smoking prevalence increasing as income or education levels decreased. Smoking prevalence was also significantly higher in Ontarians who live in rural or northern areas, who are gay, lesbian or bisexual, or who work in blue collar occupations. Groups with lower education were less likely to attempt to quit and quit smoking long-term. Ontarians with lower income, in blue collar occupations, or who identify as Black, were also less likely to quit smoking long-term.

Conclusions: While Ontario has made substantial progress in reducing tobacco use through its tobacco control strategy, sustained investment in universal and targeted tobacco control policies and programs is needed to further reduce tobacco use and health inequities.

Keywords: tobacco; health equity; cancer prevention

Themes: Prevention of Chronic Disease; Population Health

P09

PROMOTING TOBACCO-WISE MESSAGING TO REDUCE COMMERCIAL TOBACCO USAGE IN FIRST NATIONS, INUIT AND MÉTIS COMMUNITIES: THE ABORIGINAL TOBACCO PROGRAM

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Purpose: As a part of the Aboriginal Cancer Control Unit (ACCU) at Cancer Care Ontario (CCO), the Aboriginal Tobacco Program (ATP) works with and for First Nation, Inuit, Métis (FNIM) partners to enhance knowledge, build capacity and empower communities with the skills and tools needed to address commercial tobacco cessation, protection and prevention.

Methods: Many First Nations and Métis communities have a sacred relationship with tobacco. The ATP encourages and partners with FNIM communities to become “Tobacco-Wise” and use tobacco in a traditional way while breaking free from commercial tobacco addiction. Since 2012, the ATP has held community-tailored smoking prevention and cessation workshops for FNIM youth and adults across Ontario. To ensure the success of the program, survey evaluations were revised in April 2017, and offered to participants post-workshop.

Results: Since April 2017, 63 cessation and 42 prevention workshops were held, reaching a total of 2769 people. As a result of prevention workshops, 64% (n=944) of youth participants indicated that they were Tobacco-Wise, compared to only 45% before the workshop (n=948). Over 86% of youth knew that second hand smoke is harmful (n=940) and 79% (n=938) knew it is a healthy choice to quit. As a result of the adult cessation workshops, 93% of participants found the workshop helpful (n=97) and 74% (n=88) indicated they would like to either cut back or plan to quit within an average of 5 months.

Conclusions: As a result of these workshops, the ATP has established strong relationships with FNIM communities that has built capacity to address commercial tobacco.

Keywords: chronic disease prevention; smoking prevention; physical activity

Themes: Prevention of Chronic Disease; Population Health

P10

COMMERCIAL TOBACCO EXPOSURE IN FIRST NATIONS, INUIT AND MÉTIS IN ONTARIO: RESULTS FROM POPULATION-BASED HEALTH SURVEYS AND IMPLICATIONS FOR CANCER CONTROL

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Purpose: The lack of comprehensive health data is a significant barrier to better understanding and reducing the risk of chronic diseases among First Nations, Inuit and Métis people in Ontario. This study estimates commercial tobacco exposure (cigarette smoking and second-hand smoke) in First Nations, Inuit and Métis in comparison to non-Aboriginal Ontarians.

Methods: We measured age-standardized prevalence estimates using the First Nations Regional Health Survey Phase 2 (for First Nations on-reserve), Canadian Community Health Survey (for First Nations off-reserve, Métis and non-Aboriginal Ontarians) and the Aboriginal Peoples Survey (for Inuit).

Results: A higher proportion of First Nations adults and adolescents on- and off-reserve smoked compared to their non-Aboriginal counterparts. The same trend was observed in Métis adults and adolescents. Métis adolescents were more likely to be regularly exposed to second-hand than non-Aboriginal adolescents. Inuit adults had a higher prevalence of current smoking and a higher prevalence of regular second-hand smoke exposure at home.

Conclusions: The high prevalence of cigarette smoking and second-hand smoke exposure suggests that First Nations, Inuit and Métis people may experience a greater future burden of cancer and other chronic diseases related to smoking. Differences in survey questions and the lack of ethnic identifiers in most Canadian health databases limit our understanding of cancer burden and other health outcomes in these populations. Knowledge-sharing and relationship building between First Nations, Inuit and Métis organizations, researchers and data custodians are essential to ensure appropriate data governance, meet health needs and further cancer control activities, including prevention.

Keywords: cigarette smoking; First Nations; Inuit; Métis; cancer control

Themes: Prevention of Chronic Disease; Population Health

P11 – ENVIRONMENTAL/OCCUPATIONAL POSTER WALK

CANCER RISKS AMONG CONSTRUCTION WORKERS IN ONTARIO: RESULTS FROM THE OCCUPATIONAL DISEASE SURVEILLANCE SYSTEM, 1983-2016

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Purpose: Construction workers may be exposed to numerous carcinogens including diesel engine exhaust, silica, asbestos, and solar radiation. This study uses data generated by the newly established Occupational Disease Surveillance System (ODSS) to examine cancer risks among construction workers in Ontario.

Methods: ODSS was recently established as a novel approach for identifying existing and emerging trends in work-related disease among workers in Ontario. ODSS captures data for more than 2.1 million Ontario workers through a linkage of existing administrative databases: WSIB accepted time-loss claims, Registered Persons Database (RPDB), Ontario Cancer Registry (OCR), and hospital, ambulatory care and OHIP billing records. Cancer risks among construction workers were estimated using disease-free survival Cox Proportional Hazard models.

Results: Over 215,000 construction workers were followed-up for cancer diagnosis from 1983 to 2016. During follow-up, approximately 4,050 workers were diagnosed with lung cancer. The highest risk was observed among those employed in excavating, grading and paving work (HR 1.48 for males; HR 2.45 for females). A nearly 2.5-fold increased risk of mesothelioma was also observed among construction workers, indicating asbestos exposure. Excess risks were also observed among some construction worker subgroups such as colon cancer among males in excavating, grading and paving (HR 1.36) and bladder cancer among males employed in erecting, installing and repairing electrical power and wire communications equipment (HR 1.15).

Conclusions: ODSS detected expected associations between construction employment and some cancers. Since the construction industry is a major employer in Ontario, identifying at-risk groups and potential work-related hazards is crucial for supporting prevention efforts to protect workers.

Keywords: cancer surveillance; workplace carcinogens; occupational disease

Themes: Prevention of Chronic Disease; Population Health; Best Evidence

P12

ESTIMATING THE FUTURE CANCER BURDEN IN ONTARIO CONSTRUCTION WORKERS

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Purpose: Construction workers are exposed to several carcinogens in the workplace. This study assesses the future cancer burden due to carcinogenic exposures among Ontario construction workers, and the effect of implementing specific interventions on the future burden. This presentation will focus on the methods of the study, using silica as an example.

Methods: The annual number of cancers attributable to particular exposure was estimated from 2030 to 2060 based on the prevalence of exposure (PrE) and the risk of cancer (RR) associated with exposure. The RR was selected from a review of the epidemiologic literature. The PrE was estimated using CAREX Canada estimates of prevalence and level of exposure, combined with Canadian employment data, labour force characteristics, and survival probabilities. The intervention methods were assumed to be fully implemented from 2020, and incorporated into the model by adjusting prevalence and level of exposure.

Results: We estimated that without intervention, 107 lung cancers were attributable to silica exposure in Ontario construction workers in 2030. This number increased to 181 in 2060. If intervention methods (e.g. using respirators) were applied, the reduction in the attributable cases became evident from 2040 onward, with a maximum reduction of 51 in 2060. Overall, 481 cancers would be prevented between 2030 and 2060.

Conclusions: Future work-related cancers can be prevented by reducing exposure. Next steps in this project include the economic assessment of both the cancer burden and the costs of implementing exposure control. The results of this project will help assess the effectiveness and cost-benefit of different intervention methods.

Keywords: workplace carcinogen; construction industry; burden; intervention

Themes: Prevention of Chronic Disease; Population Health

P13 – ENVIRONMENTAL/OCCUPATIONAL POSTER WALK

ASSESSMENT OF DIESEL EXHAUST EXPOSURE IN MUNICIPAL FIRE HALLS IN ONTARIO

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Purpose: Firefighters and their employers continue to be concerned about the rate of cancer among this group of workers. Firefighters may be exposed to carcinogens while fighting fires, but spend very little time in this activity. This suggests that there may potentially be other hazards in the fire halls contributing to the increased risk of cancer such as diesel exhaust. The goal of the study was to assess diesel exhaust exposure and investigate the factors that may influence exposure levels in municipal fire halls in Ontario.

Methods: This is the first study evaluating diesel exhaust exposure in Canadian fire halls. We conducted a field survey of 12 municipal fire halls in the summer and winter from six fire departments from different regions within Ontario to assess diesel exhaust exposure levels within the fire halls, examine current practices regarding control of diesel exhaust and assess any regional and seasonal differences in exposures and work practices.

Results: 69 area air samples were collected and 11 of these had detectable levels of elemental carbon [<0.5 to $2.7 \mu\text{g}/\text{m}^3$]. Exposures were higher in the vehicle bays and during the summer.

Conclusions: Fire departments in Ontario need to continue minimizing exposure within the fire halls to reduce health risks. Prevention of worker exposure is the only way to protect against developing diesel exhaust exposure related illnesses. Fire departments should continue to use and implement diesel exhaust control strategies.

Keywords: exposure assessment; diesel engine exhaust; firefighters; carcinogens

Themes: Prevention of Chronic Disease; Population Health

P14

A CLOSER LOOK AT COLPOSCOPY SERVICES IN ONTARIO

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Purpose: Provide information on the quality and timeliness of colposcopy services in Ontario based on select cancer screening indicators for 2014 and 2015.

Methods:

Study population:

Ontario screen-eligible women, 21 to 69 years old (2014-2015)

Measures:

- Median wait time (in days) from index high grade Pap test to colposcopy
- Proportion within wait time guidelines
- Proportion who went directly to colposcopy from first time ASCUS

Analyses:

Descriptive statistics were used to summarize and describe the screening data. Pearson Chi-square Test was used to assess proportions ($p < 0.05$ was considered as statistically significant).

Results:

1. In Ontario, median wait time decreased from 62 days in 2014 to 55 days in 2015. The proportion of women seen for colposcopy within the recommended wait times significantly increased from 2014 to 2015 for ASC-H and HSIL Pap test results ($p < 0.001$).
2. The proportion of women who were seen for colposcopy after one ASCUS Pap smear was 6% in 2014 and 2015. Some variation exists by age group but the proportion has been stable for the two-year period.

Conclusions:

1. For a screening program to be effective, women requiring colposcopy service should be seen within the recommended wait times and those that do not require this service should not receive it unnecessarily.
2. Further strategies are required from a program perspective to continue monitoring and improving colposcopy services in the province.
3. Ongoing monitoring of these indicators will help inform strategic planning to improve the quality of colposcopy services and reduce the burden of cervical cancer in Ontario.

Keywords: screening; colposcopy; cervical cancer; OCSP

Themes: Prevention of Chronic Disease; Population Health

P15 – ENVIRONMENTAL/OCCUPATIONAL POSTER WALK

UNDERSTANDING AAMJIWNAANG FIRST NATION'S ENVIRONMENTAL HEALTH JOURNEY

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Purpose: Aamjiwnaang First Nation is situated near the Sarnia-Lambton “Chemical Valley”, an industrial complex of refining and chemical companies. This has resulted in poor air quality, chemical spills and other environmental events. Residents of Aamjiwnaang are concerned about the health impacts of these environmental exposures. In past decades, Aamjiwnaang has been involved in over 20 research studies, including air, water, animal and food analyses. The aim of this project is to consolidate these data to describe a more complete account.

Methods: This study will include (a) assessment of air quality on risk of cancer, (b) systematic review of the impact of the environmental factors on the health of residents and (c) digital stories to portray community members' perspectives. Various databases were searched for research studies examining environmental quality and human health outcome within the population in a 20km radius of Aamjiwnaang.

Results: The deliverables for the project are being determined in collaboration with the Health Committee at Aamjiwnaang and will integrate academic tools with Indigenous knowledge. Knowledge products will likely include visual representation of the data, reports and a joint peer-reviewed publication. The digital stories will produce a collage of images that illustrate and describe the influences and realities of environment and health in the community, overlaid with the results from the risk assessment and systematic review.

Conclusions: This work will contribute to an enhanced understanding of environmental impact on health among Aamjiwnaang residents. It highlights the importance of partnership to create actionable recommendations and products for First Nations communities.

Keywords: environmental health; mixed methods; First Nations

Themes: Environmental Health; Population Health

P16

IMPACT OF PATIENT DIRECTED CYTOLOGY RESULTS CORRESPONDENCE PROGRAM ON APPROPRIATE MANAGEMENT OF HIGH GRADE CYTOLOGY

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Purpose: Proper follow-up of High Grade (HG) Pap test result is critical to the prevention of cervical cancer. The purpose of this study was to evaluate the impact of a patient based results correspondence program on appropriate and timely follow-up of HG Pap test among at risk women aged 21-69 in Ontario, Canada.

Methods: A cohort study with a historical control was used to investigate the impact of a result letter on adherence to follow-up after a HG Pap test. Analyses were conducted in an intention-to-treat basis. The intervention group was defined as women with a HG Pap test in 2014-2016 and the control group included women with a HG Pap test in 2010-2012. Follow-up was defined as a colposcopy or related treatments within 6 months of a HG Pap test. Factors that might influence adherence to follow-up were included as covariates in a multivariable logistic regression model.

Results: The study population comprised of 7,088 women in the intervention group and 6,887 women in the control group. Follow-up rate in the intervention group was 86.2% compared to 81.0% in the control group. Controlling for covariates, women in the intervention group were more likely to have a follow-up (AOR=1.4, 95% CI 1.3-1.6). Other significant factors included being registered to a specific family physician and physician's gender.

Conclusions: The patient based correspondence program which provides cytology results directly to the woman has reduced loss to follow-up for a HG abnormality with an increased colposcopy and treatment.

Keywords: cervical screening; correspondence; follow-up; abnormal Pap

Themes: Health System Improvements & Innovations; Population Health

P17 – ENVIRONMENTAL/OCCUPATIONAL POSTER WALK

RESPIRATORY CANCER IN MINERS: PRELIMINARY RESULTS FROM AN ONTARIO HARD ROCK MINING COHORT

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Purpose: Underground mining involves exposure to numerous agents associated with respiratory cancer, including crystalline silica, diesel engine exhaust, radon daughters, arsenic, nickel, and other metals. This study investigates the risk of respiratory cancers in an updated cohort of Ontario hard rock miners.

Methods: Beginning in 1928, the Province of Ontario held annual examinations for miners to certify that their respiratory health was acceptable for underground work. Employment information was collected until the program was terminated in 1987. Select portions of these data have been used in previous research, but the complete cohort accounting for mixed exposures, has not been investigated since 1983. The cohort was linked to the Ontario Cancer Registry (OCR) to obtain cancer incidence data for the 1964 to 2017 period. Preliminary results for respiratory cancers are reported here.

Results: The cohort contains information on 93,034 miners employed from 1877 to 1987, with many having died or left the province after the end of the examination program. A total of 5,281 (6%) of these miners were linked to incident respiratory cancer data from the OCR. The most common forms of primary malignant respiratory cancers were lung (n=4,716), laryngeal, (n=306), mesothelioma (n=55), sino-nasal (n=49), nasopharyngeal (n=43), and pleural (n=6).

Conclusions: Next steps will involve the modeling of respiratory cancer risk in relation to work history and exposure information. This Ontario cohort is a valuable tool for investigating cancer risk for miners exposed to multiple hazards over the course of their mining career.

Keywords: respiratory cancer; record linkage; mining industry; cohort study

Themes: Prevention of Chronic Disease; Population Health

P18

SURGICAL TREATMENT OF METASTATIC GASTRIC CANCER IN ONTARIO

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Purpose: Gastrectomy is a complex and morbid procedure for which the benefit in gastric cancer patients with metastatic disease is unclear. We therefore aimed to describe the application of gastrectomy for metastatic gastric cancer patients in Ontario.

Methods: A population-based, retrospective cohort study was conducted of gastric adenocarcinoma patients with metastatic disease diagnosed between January 1, 2002 and December 31, 2014 who underwent gastrectomy. Follow-up was complete to June 30, 2015. Linked administrative data holdings at the Institute for Clinical Evaluative Sciences were used to identify patient and operative characteristics, as well as 30- and 90-day mortality.

Results: Of 12,613 gastric adenocarcinoma patients, 5,075 patients were identified as having metastatic disease. Gastrectomy was performed in 1,215 (24%) metastatic gastric cancer patients. Multivisceral resection was conducted with 33% of all gastrectomies. The number of surgeries per year ranged from 148 to 255 and a range of 23 to 536 gastrectomies occurred in each Local Health Integration Network. The 30-day mortality of patients was 21% and the 90-day mortality was 35%.

Conclusions: A large proportion of Ontarian gastric cancer patients with metastatic disease underwent gastrectomy. Many of these patients also underwent resection of other viscera. A broad range in the number of surgeries performed per year and per health region was observed. Most notably, high 30-day and 90-day mortality rates were observed in metastatic gastric cancer patients who underwent gastrectomy.

Keywords: metastatic gastric cancer; gastrectomy

Themes: Health System Improvements & Innovations; Population Health

P19

A POPULATION-BASED STUDY OF MELANOMA BRAIN METASTASIS TREATMENT: HAS PROGRESS IN SYSTEMIC THERAPY AND RADIOTHERAPY IMPROVED PATIENT OUTCOMES?

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Purpose: Outcomes for patients with melanoma brain metastases (MBM) have been poor. New radiotherapy technologies and systemic agents have improved outcomes in trials. Outcomes have rarely been studied at the population level.

Methods: This was a retrospective population-based cohort study of patients in the Ontario Cancer Registry treated for MBM 2007-2016. Treatments and outcome were described by era (2007-2009, 2010-2012, 2013-2016). Cancer treatments were defined using administrative data. Outcomes were adjusted using Cox regression.

Results: 1096 MBM patients were treated 2007-2016. Whole brain radiation therapy (WBRT) was the first brain-directed treatment in 75.5% 2007-2009, dropping to 52.0% 2013-2016. Stereotactic radiation or other conformal techniques increased from 3.4% 2007-2009 to 21.3% 2013-2016. Use of BRAF/MEK inhibitors and immunotherapy increased: <2.0% 2007-2009 to 40.9% 2013-2016. In 2013-2016 one-year survival was 21.8% and 13.8% after two years. This compared to 12.3% and 6.4% 2007-2009, and 10.7% and 5.5% 2010-2012 ($p=0.001$). The OS difference remained in adjusted analysis (adjusted hazard ratio (AHR) with 95% confidence interval 2013-2016 vs. 2007-2009: 0.65 (0.56-0.77)). In the latter two eras, there was greater avoidance of WBRT (e.g. AHR 2013-2016 vs. 2007-2009: 0.32 (0.22-0.46)). The time between first and second brain-directed treatment course was shorter in later eras (e.g. AHR 2013-2016 vs. 2007-2009: 2.16 (1.48-3.14)).

Conclusions: The advent of new radiotherapy technologies and systemic treatments for MBM was associated with increased survival and greater avoidance of WBRT. The time between brain-directed courses decreased as stereotactic treatments increased. However, many still receive WBRT.

Keywords: brain metastasis; immunotherapy; melanoma; radiotherapy

Theme: Population Health

P20 – ELEVATOR PITCH

RISK OF ADVANCED ADENOMA, COLORECTAL CANCER, AND COLORECTAL CANCER MORTALITY IN PEOPLE WITH LOW-RISK ADENOMAS AT BASELINE COLONOSCOPY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Purpose: We conducted a systematic review and meta-analysis of the risk of advanced adenomas (AAs), colorectal cancer (CRC), and/or CRC-related death among individuals with low-risk adenomas (LRAs).

Methods: We searched PubMed and Embase for studies published between January 2006 and July 2015. Quality and strength of the evidence were rated using the Newcastle-Ottawa Scale and GRADE framework, respectively.

Results: Eleven observational studies (n=64,317) were included. The pooled 5-year cumulative incidence of AA was 3.28% (95% CI: 1.85-5.10%), 4.9% (95% CI: 3.18-6.97%), and 17.13% (95% CI: 11.97-23.0%) for the no adenoma, LRA, and AA baseline groups, respectively. A meta-analysis of eight cohort studies (n=10,139; 3-10 years' follow-up) showed a small but statistically significant increase in the incidence of AAs in individuals with LRAs compared with those with a normal baseline colonoscopy (RR 1.55 (95% CI: 1.24-1.94); P=0.0001; I²=0%). Compared with the general population, among individuals with LRAs there was a reduction in the risk of CRC (SIR 0.68 (95% CI: 0.44-0.99; median 7.7 years follow-up) and OR 0.4 (95% CI: 0.2-0.6); 3-5 years' follow-up), and a 25% reduction in CRC mortality (SMR 0.75 (95% CI: 0.63-0.88); median 7.7 years follow-up).

Conclusions: Compared with the general population, people with LRAs have significantly lower risks of CRC and CRC-related mortality. However, compared to those with a normal baseline colonoscopy, there is a small statistically significant increase in the risk of AAs in people with LRAs; the clinical importance of this observation is uncertain.

Keywords: colorectal cancer; low risk adenoma; advanced adenoma; colonoscopy

Themes: Prevention of Chronic Disease; Population Health

P21 – SCREENING POSTER WALK

AUDIT AND FEEDBACK FOR COLONOSCOPY IMPROVES ENDOSCOPIST PERFORMANCE AMONGST POOR PERFORMERS: RESULTS FROM A PRAGMATIC RANDOMIZED CONTROLLED TRIAL

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Purpose: A pragmatic randomized controlled trial was conducted to determine if audit and feedback (A/F) for colonoscopy compared to no A/F improves endoscopist performance in Ontario.

Methods: All Ontario endoscopists were randomly assigned to either intervention (A/F report, n=417) or control (no A/F report, n=416). A/F reports were generated centrally using health administrative data and issued in October 2015. We measured colonoscopy performance in both groups over two periods: pre-report/baseline and post-report (12 months prior and after index date, respectively). Standardized differences were used to compare intervention vs. control at baseline. Primary and secondary outcomes were change in polypectomy rate (PR) and cecal intubation rate (CIR) over the 2 periods, respectively. Poisson regression under a difference-in-difference framework was used to compare primary and secondary outcomes between all endoscopists and between 'poor performers' (PR ≤25%) in both groups.

Results: For all endoscopists, PR and CIR in both groups improved from the pre- to the post-report periods, without a significant difference between the intervention and control groups (p=0.09 and p=0.32 respectively). Among poor performers, PR improved in both groups from the pre- to the post-report periods with significantly greater improvement in the intervention (change in PR from 20.1% to 24.5%) vs. control group (change in PR from 20.8% to 23.2%) (p=0.02). The change in CIR over the two study periods was not significant (p=0.21).

Conclusions: A/F reports for colonoscopy improved endoscopist performance among those who were poor performers at baseline, supporting the implementation of A/F to improve colonoscopy quality in Ontario.

Keywords: audit and feedback; physician performance; colonoscopy quality; randomized controlled trial

Theme: Population Health

P22

SCREENING ACCURACY AND BREAST CANCER CHARACTERISTICS IN BRCA MUTATION CARRIERS IN THE HIGH RISK ONTARIO BREAST SCREENING PROGRAM

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Purpose: This study examined the accuracy of magnetic resonance imaging (MRI) and digital mammography (DM) in mutation carriers in the High Risk Ontario Breast Screening Program (OBSP) by *BRCA* status, age and breast cancer characteristics.

Methods: Information was collected for women referred to the High Risk OBSP from July 2011-June 2015, screened until June 2016, and followed until December 2016 (n=9,003). Among mutation carriers, cancer detection rates (CDR), sensitivity, and specificity were compared by *BRCA* status and age. Prognostic features of cancers by *BRCA* status were also examined.

Results: There were 1,771 *BRCA* 1/2 mutation carriers (*BRCA*1=870, *BRCA*2=901), with 4,499 screening episodes, and 114 breast cancers (*BRCA*1=61, *BRCA*2=53) detected (CDR: 25.3/1,000; 95%CI: 20.9-30.4). CDR was non-significantly higher in women with *BRCA*1 versus *BRCA*2 mutation (CDR: 27.9/1,000; 95% CI:21.4-35.6 vs. 23.0/1,000; 95%CI:17.2-29.9), especially among those 50 to 69 years of age (CDR: 30.2/1,000; 95%CI:20.9-42.2 vs. 22.6/1,000; 95%CI:15.3-32.1). Sensitivity and specificity among all women were 90.6% (95%CI:83.0-96.0) and 83.5% (95%CI:82.2-84.8), respectively. Among women 50 to 69 years of age, sensitivity was non-significantly higher by 14% in women with *BRCA*1 mutation (95.8%, 95%CI:78.9-99.9 vs. 81.8%, 95%CI:59.7-94.8%); specificity was significantly higher in women with *BRCA*2 mutation (89.5%, 95%CI:87.4-91.3 vs. 85.8%, 95%CI:83.2-88.2). The risk of ductal carcinoma in-situ was significantly higher among *BRCA*2 mutation carriers (OR=3.63; 95%CI:1.04-12.61), while risk of triple negative cancers was significantly lower (OR=0.17; 95%CI:0.05, 0.67).

Conclusions: Screening with annual MRI and DM has been effectively implemented into an organized breast screening program and remains an important management option for known *BRCA* mutation carriers.

Keywords: BRCA1/2 mutation; magnetic resonance imaging (MRI); digital mammography (DM); sensitivity; specificity

Themes: Prevention of Chronic Disease; Population Health; Health Services Delivery

P23

CHARACTERIZING THE UTILIZATION OF THE TRILLIUM DRUG PROGRAM BY AN ONCOLOGY PATIENT POPULATION

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Purpose: The Trillium Drug Program (TDP) is a provincial government program for residents of Ontario, Canada for whom prescription medications pose a large burden on their annual income. An oncological patient population is of particular interest due to rising cost of antineoplastic medications. There is little published information on recipients of TDP and the costs to the program. The aim of this study was to characterize the demographics and to investigate the cost for this population.

Methods: Individuals age < 65 with a cancer diagnosis from 2000-2009 were ascertained from the Ontario Cancer Registry. The Ontario Drug Benefit database was used to identify prescription medication claims to the TDP. We examined baseline demographics and claims-related characteristics for the study cohort.

Results: 19,029 cancer patients with a TDP claim were included in the study, 63% of whom enrolled following their diagnosis. Nearly 60% of the patients were female, half were in the poorest two income quintiles and the majority resided in urban areas. Total TDP expenditure for the cohort increased from \$3.4 million in 2000 to \$22.2 million in 2009. Antineoplastic drug expenditures increased from \$130,000 (4% of total) in 2000 to \$11 million (50% of total) in 2009, far outpacing the rise in cancer incidence. Though most cancer types had similar pre-diagnosis TDP expenditures, average costs following diagnosis differed: lung, colorectal and breast cancer patients averaged < \$200/month; prostate, kidney, myeloma and lymphoma patients averaged <\$400/month; and leukemia patients averaged over \$1,500/month, dominated by imatinib which accounted for \$5.4 million among only 173 patients.

Conclusions: Our study is one of the first attempts characterizing TDP utilization in an oncology population, and results show that utilization increased over time and differed across cancer diagnoses. These results have public health and policy implications as antineoplastic drug costs continue to rise and place burden on patients.

Themes: Costing; Population Health

P24 – SCREENING POSTER WALK

THE HIGH RISK ONTARIO BREAST SCREENING PROGRAM (HIGH RISK OBSP): ORGANIZED SCREENING OF BRCA MUTATION CARRIERS

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Background: Established in 2011, the High Risk Ontario Breast Screening Program (High Risk OBSP) is an organized breast screening program which screens women ages 30 to 69 identified as “high risk”, including known carriers of a deleterious gene mutation (e.g., *BRCA1*, *BRCA2*). Gene mutation carriers may be eligible for screening in the program through one of two pathways, depending on whether they are known or suspected carriers. Known mutation carriers referred into the High Risk OBSP are considered immediately eligible to begin high risk screening. Suspected mutation carriers (based on personal or family history) referred into the High Risk OBSP are required to undergo genetic assessment. Genetic testing may be performed as part of genetic assessment, and women found to be *BRCA1/2* mutation carriers are eligible for high risk screening. In the High Risk OBSP, women are screened with annual mammography and breast magnetic resonance imaging (MRI) (or, if MRI is not medically appropriate, screening breast ultrasound). The objectives of this poster are to describe (i) the High Risk OBSP and clinical pathway, and (ii) the High Risk OBSP's experiences in identifying and screening *BRCA1/2* mutation carriers. Since its inception, the High Risk OBSP has evolved in response to operational and clinical needs. The program is continually monitored and adopts best practices to provide optimal breast screening services to high risk women.

Keywords: breast; screening; program; cancer; genetics

Themes: Health System Improvements & Innovations; Population Health

P25

SURVIVAL IN OLDER WOMEN WITH CERVICAL CANCER: WHAT IS THE IMPACT OF SCREENING HISTORY?

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Purpose: A population level retrospective cohort study to determine the influence of cervical screening history on the survival from cervical cancer in women 50 and older.

Methods: Women aged 50 and over diagnosed with invasive cervical cancer in Ontario, Canada between 2005-2012 and followed up until 2016. Screening history was observed for the 5 years prior to diagnosis. Health care administrative databases were linked to determine demographic, affiliation with primary care physicians, stage (available 2010-12), treatment and survival data. Kaplan Meier and multivariate analyses were carried out to evaluate the impact of cervical screening on survival.

Results: 1938 women aged 50 and over were diagnosed with invasive cervical cancer between 2005 -2012. 748 women were screened within the 5 years prior to diagnosis (median age 59) compared to 1190 not screened (median age 64). Of the screened women, 42.9% presented with stage \geq II and 69.3% of unscreened had advanced disease. Four year overall survival (OS) was significantly greater in the screened group: 75.3% (CI: 71.9-78.1) vs. 53.3% (CI: 50.5-56.1%). In our univariate analysis, screening was significantly related to survival (HR 2.1, $p < 0.01$). In our multivariate analysis after adjusting for age, treatment, affiliation with a primary care and income, screening was still significantly associated with improved survival (HR 1.59, $p < 0.01$).

Conclusions: Our results demonstrate a survival benefit to cervical cancer screening in women aged 50 and over who are diagnosed with cervical cancer. Cervical cancer screening participation must be encouraged in women older than 50 as screening rates decline in this age group.

Themes: Person-Centred Care; Health System Improvements & Innovations; Population Health

P26 – ELEVATOR PITCH

RISK OF SECOND CANCER IN BREAST CANCER SURVIVORS

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Purpose: During the last decade, breast cancer survival has increased considerably, largely as a result of improved screening and advances in treatment. As the risk of developing cancer increases with age, longer lifetimes are associated with increased probabilities of a second cancer occurrence. Our aim is to improve the prediction of cancer patients that are most, or least, likely to develop a second cancer which can help prioritize the follow-up of those previously diagnosed with a first breast cancer.

Methods: A population-based retrospective cohort of Ontario women diagnosed with invasive breast cancer in Ontario in 2010-12 were identified to exam the incidence of lung, uterine and ovarian, and acute myeloid leukemia cancer in breast cancer patients and the effect of radiation therapy.

Results: Those breast cancer patients have a more than four-fold increased risk of developing a contralateral breast cancer, more than two fold increased risks of uterus and ovarian cancer, and an increased risk of lung and acute myeloid leukemia. A preliminary analysis shows that chemotherapy treatment increases the risk of secondary non breast cancers or contralateral breast cancers. Screening mammography reduces the risk of contralateral breast cancer significantly but has no effects on the occurrence of secondary non breast cancer.

Conclusions: Chemotherapy might be a greater risk factor of second primary cancer than radiation therapy in breast cancer patients. A more comprehensive study is required to provide more evidences of the elevated risks in women diagnosed with breast, uterine, and ovarian cancer to reveal the patterns among subsequent cancers.

Keywords: breast cancer; second primary cancer; chemotherapy; radiation therapy; contralateral breast cancer

Themes: Prevention of Chronic Disease; Population Health

P27 – SCREENING POSTER WALK

CERVICAL CANCER SCREENING FOR TRANS MEN: AN INTEGRATION OF THREE SYSTEMATIC REVIEWS

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Purpose: Cancer Care Ontario is developing a policy on the appropriate inclusion of trans men in organized cervical screening. To inform this policy, we conducted one systematic review of guidelines on existing cervical screening recommendations for trans people and two systematic reviews of primary research on the benefits and harms of cervical screening, and the effect of cross-sex hormones (CSHs) on cervical cancer risk, prognosis and mortality for trans men.

Methods: Multiple electronic databases and grey literature sources were searched for primary research, clinical practice guidelines and position statements published between 1997 and 2017. Citations were screened by two independent reviewers using pre-defined criteria. One reviewer extracted data and assessed the methodological quality of articles; a second reviewer verified these. Results were synthesized narratively.

Results: Two clinical practice guidelines of higher quality, four of lower quality, and five position statements provided cervical screening recommendations for trans men. No primary research evidence was identified. Ten clinical practice documents supported cervical screening for trans men who have not had their cervix removed. Seven recommended Pap smear as the screening modality; the recommended cervical screening interval was variable. None provided recommendations for human papillomavirus (HPV) testing.

Conclusions: While there is insufficient scientific evidence to determine the benefits and harms of screening for this population, existing clinical practice documents support cervical screening. There was insufficient evidence to determine the effect of CSHs on cervical cancer risk, prognosis and mortality. Further large-scale, comparative, prospective research is needed on these topics and HPV testing in particular.

Keywords: transgender; trans men; cervical cancer; screening

Themes: Health System Improvements & Innovations; Best Evidence

P28

FEASIBILITY FOR THE PILOT IMPLEMENTATION OF A LOW DOSE CT LUNG CANCER SCREENING PROGRAM

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Purpose: The highest risk populations for developing lung cancer are found among lower socioeconomic groups. 30% of patients enrolled with St. Michael's Hospital Academic Family Health Team (SMHAFHT) are below the low-income cut-off. This study aims to implement low-dose CT (LDCT) screening at SMHAFHT using the Knowledge-to-Action framework.

Methods: Stakeholders were engaged to adapt an existing Princess Margaret Cancer Centre (PM) LDCT program with focus groups, interviews, and patient post-LDCT interviews to assess barriers and facilitators. PLCO2012 scores stratified patient risk for recruitment.

Results: 12 patients were assessed for eligibility; 8 (66%) qualified and 5 (42%) completed LDCT. 11 (92%) patients assessed were from two SMHAFHT Smoking Cessation Clinics (SCC). The SCC (vs LDCT) group was younger (51 ± 12 vs 69 ± 7 , $p=0.001$), had lower Charlson comorbidity index scores (2.1 ± 1.8 vs 3.4 ± 1.7 , $p=0.15$) and had fewer pack years (37 ± 24 vs 56 ± 16 , $p=0.06$). Both groups had comparable proportions of males (64% vs 66%), COPD (30% vs 33%), and personal cancer history (5% vs 0%), all $p>0.6$. Thematic analysis yielded the following barriers among practitioners: limited study awareness, difficulty providing consent forms and lack of time. Top patient reported barriers included the fear of positive results, LDCT and follow up procedures. Practitioner facilitating factors included greater research coordinator involvement, while patients reported clear communication of LDCT risks and benefits.

Conclusions: Implementation predominantly took place in SMHAFHT SCCs. Barriers for future intervention were identified. Differences between participants of SCC and LDCT screening can be attributed to selection of the highest-risk group with PLCO2012 scores.

Keywords: smoking cessation; lung cancer screening; low dose CT; Knowledge-to-Action

Themes: Population Health; Health Services Delivery; Best Evidence

P29

COMPARISON OF HEALTH UTILITY VALUES FROM EQ-5D-3L AND EQ-5D-5L IN BREAST CANCER PATIENTS IN DIFFERENT HEALTH STATES

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Purpose: Recently, our group reported Canadian-derived EQ5D-3L-derived health utility scores for over 20 different cancer sites (PMID: 27567613). However, more recently Canadian valuation set for EQ5D-5L derived health utilities have been reported. As we switch from the 3L to 5L versions, we evaluated whether data could be analyzed together across versions.

Methods: Breast Cancer patients in three health states were evaluated using EQ-5D-3L from 2014-2015, and EQ-5D-5L from 2016-2017. Mean (SD) values were compared.

Results: Of 387 breast cancer patients, 259 (67%) had completed the EQ-5D-5L while 128 (33%) completed the EQ-5D-3L. The two groups had similar distributions for clinico-demographic data except for ethnicity, where there were more Asian patients in the 5L (22% vs 9%; $p=0.007$). Comparing EQ-5D-5L vs EQ-5D-3L within health states, the EQ-5D-5L values were numerically higher for all three health states: for primary breast cancer (mean HUS(SD)/version: 0.85(0.11)/5L vs 0.81(0.16)/3L); locoregional recurrence (0.87(0.08)/5L vs 0.85(0.20)/5L); metastatic disease (0.79(0.15)/5L vs 0.78(0.13)/3L). There was greater separation and statistical significance between health states when using the 5L version when compared to the 3L version. The 5L version had a greater variation of values than the 3L, utilizing the entire spectrum of values from 0.0 to 1.0.

Conclusions: [There should be extreme caution if considering combining health utility values from EQ-5D-5L and EQ-5D-3L in Canadian breast cancer datasets. The 5L version captured greater variability than the 3L.

Keywords: EQ-5D-5L; EQ-5D-3L; breast cancer; health utility value

Themes: Person-Centred Care; Value for Money; Health Services Delivery; Value Determination

P30 – PALLIATIVE CARE POSTER WALK

ACTIVE IDENTIFICATION OF PATIENTS APPROPRIATE FOR PALLIATIVE CARE - IMPACT ON USE OF PALLIATIVE CARE AND HOME CARE RESOURCES

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Purpose: To evaluate whether active identification of patients who may benefit from a palliative approach to care changes the use of palliative care and home care services.

Methods: Between 2014 and 2017, Cancer Care Ontario implemented the INTEGRATE project among 4 cancer centres and 4 primary care teams. Physicians in participating sites were encouraged to systematically identify patients who were likely to die within 1 year and would benefit from palliative care. Patients in the INTEGRATE intervention group were 1:1 matched to non-intervention controls selected from provincial healthcare administrative data based on a publicly funded health system using the propensity score-matching approach. Palliative care and home care services utilization was evaluated within 1 year after the date of identification (index date), censoring on death, or March 31, 2017, the study end date. Cumulative incidence function was used to estimate the probability of having used care services, with death as a competing event. Rate of service use per 360 patient-days was calculated. Analyses were done separately for palliative care and home care.

Results: Of the 1,187 patients in the INTEGRATE project, 1,185 were matched to a control. The intervention and the control groups were well-balanced on demographics, diagnosis, comorbidities, and death status. The probability of using palliative services in the intervention group was 81.3% (95% CI: 78.9% to 83.5%), which was significantly higher than that in the control group (63.5%, 95% CI: 60.6% to 66.2%). The intervention group had a statistically higher number palliative care visits (29.7 vs. 19.6 per 360 patient-days). The intervention group also had a greater probability of receiving home care (82.5%, 95% CI: 79.6% to 85.0%) than the control group (56.8%, 95% CI: 53.2% to 60.2%). Rate of palliative care visits in the intervention group (67.0 per 360 patient-days) doubled that in the control group (33.2 per 360 patient-days).

Conclusions: Physicians actively identifying patients that would benefit from palliative care resulted in increased use of palliative care and home care services.

Keywords: palliative care; home care; resources

Themes: Person-Centred Care; Health System Improvements & Innovations; Palliative Care; Health Services Delivery; Value Determination

P31

PHARMACOECONOMIC ANALYSIS OF BORTEZOMIB RETREATMENT FOR RELAPSED/REFRACTORY MULTIPLE MYELOMA CANCER PATIENTS IN ONTARIO

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Purpose: A health economic model was developed to estimate the cost-effectiveness of bortezomib retreatment followed by pomalidomide compared to pomalidomide alone for relapsed/refractory multiple myeloma (MM).

Methods: A Markov model was developed with three health states for progression free survival (PFS), progressed disease, and death. Given the lack of comparative data, the analysis was based on a naïve indirect comparison in PFS outcomes for each treatment (4.1 month gain, with threshold analyses conducted to address uncertainty around survival advantage. The first analysis ('minimum PFS benefit') estimated the minimum PFS advantage associated with bortezomib retreatment needed to yield an incremental cost-effectiveness ratio (ICER) below \$100,000/QALY gained, if no further benefit was assumed after progression. The second analysis ('minimum post-progression survival (PPS) benefit') assumed equal PFS between treatment arms and estimated the minimum PPS advantage from downstream pomalidomide after progression compared to palliation needed to remain economically favorable. One-way deterministic and probabilistic sensitivity analyses were also conducted.

Results: Bortezomib retreatment resulted in an ICER of \$90,032/QALY gained in the base-case analysis. In the 'minimum PFS benefit' scenario, a PFS improvement of 3.6 months with bortezomib retreatment would yield an ICER under \$100,000/QALY gained. In the 'minimum PPS benefit' scenario, a PPS benefit of at least 1.8 months from use of subsequent pomalidomide in the bortezomib arm would yield an ICER under \$100,000/QALY gained.

Conclusions: While the exact magnitude is uncertain given lack of comparative clinical data, bortezomib retreatment appears to improve outcomes and remain economically attractive under a plausible range of scenarios.

Keywords: economics; health technology assessment; bortezomib; multiple myeloma; Markov model

Themes: Value for Money; Value Determination

P32 – PALLIATIVE CARE POSTER WALK

ANALYTICAL CONCEPT DICTIONARY: DOCUMENTATION OF ALL INFORMATION RELEVANT TO THE ONTARIO PALLIATIVE CARE NETWORK DATA REPOSITORY

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Purpose: The Ontario Palliative Care Network (OPCN) is a provincial partnership focused on delivering coordinated and standardized hospice palliative care services. In response to OPCN's analytic needs, the Data and Analytics (D&A) Team has built a data repository which links 13 health administrative data sources, making it essential to accurately document data transformations, concepts and cohorts. Current documentation approaches inconsistently capture these objects. Through working sessions with end users, the D&A team has created an Analytical Concept Dictionary (ACD) to efficiently address documentation limitations.

Methods: Representatives from five CCO teams (Cancer Analytics, Strategic Analytics, Data Assets, ATC & ORN Analytics, and Data Governance) collaborated to design the documentation of the repository's concepts, measures and transformations. Concepts refer to a grouping of attributes to define a disease, life stage, treatment modality, or service type. The team created templates to satisfy information needs of users to perform their duties including analyzing data quality, and building new indicators and analytical base tables (ABTs). A content quality management plan was drafted to manage content updates and approvals.

Results: The ACD is live on CCO's internal SharePoint and utilized by the OPCN D&A team. All concepts, metrics, indicators, and data transformation information now exists on a single platform, easily accessible by respective users. The ACD has allowed for better communication of requirements.

Conclusions: The ACD was developed as proof-of-concept to document analytics relevant to OPCN. This dictionary has improved the efficiency of information accessibility of the data within the OPCN repository.

Keywords: data repository; analytical dictionary; crowdsourcing

Themes: Integrated Care; Health System Improvements & Innovations;
Value Determination

P33

ALTERNATIVE LEVEL OF CARE DAYS: NON-PAYMENT FOR POOR QUALITY IN ONTARIO HOSPITALS

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Purpose: Ontario's Quality-based Procedure (QBP) funding policy for cancer surgeries uses resource intensity weights, which may assign higher payments for alternative level of care (ALC) days. ALC days are a poor outcome for patients and health system. This funding policy research examines the impact of not remunerating hospitals for ALC days.

Methods: CCO remunerates hospitals for cancer surgeries on a volume x price x average cost weight basis. The Canadian Institute for Health Information's (CIHI) resource intensity weight (RIW) methodology for Ontario inpatient stays was replicated. The cost weights were revised to exclude ALC days from the weight calculation and applied to hospitals' QBP cases. Using the provincial price for cancer surgery QBPs, the funding impact of removing ALC days from each case was determined. Hospital-level results were generated by aggregating the existing funding policy with a hypothetical policy of non-payment for ALC days.

Results: Revising payment policy by removing ALC days had a varying impact by cancer surgery disease site. For colorectal cancer surgeries, the aggregate impact on Ontario hospitals of non-payment for ALC days was \$1.7 million. For prostate cancer surgeries there were no observed ALC days and therefore no change to funding from their removal.

Conclusions: Removing ALC days from QBP funding would better align funding policy with quality of care. Although the funding impact may not be large enough to impact hospital decision-making, and does not address care capacity in the community, this policy shifts financial risk of ALC days from the payer to hospitals.

Keywords: alternative level of care (ALC); cancer surgery; health care utilization; funding policy; value for money

Themes: Value for Money; Health Services Delivery; Value Determination

P34 – PALLIATIVE CARE POSTER WALK

IDENTIFYING PEOPLE WITH PALLIATIVE CARE NEEDS IN ONTARIO

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Purpose: Evidence shows that early initiation of palliative care can lead to improved quality of life for those with progressive, life-limiting illnesses. However, only 60% of the Ontario decedents in fiscal year 2015 were reported to have received palliative care services in their last year of life. In partnership with the Ontario Palliative Care Network, the Cancer Care Ontario Strategic Analytics Team is working to define and identify the population that would benefit from hospice palliative care for health system measurement and planning.

Methods: We implemented and evaluated two approaches for identifying palliative care needs: (i) individuals who died of one of the 10 conditions (e.g. cancer, organ failure, and neurodegenerative disease) based on cause of death data, and (ii) individuals who were diagnosed with one of these conditions in their last year of life, based on the administrative databases including the Discharge Abstract Database and the National Ambulatory Care Reporting System.

Results: It is estimated that 75% of Ontario decedents had palliative care needs, based on the cause of death data (i). This estimate remains consistent from year 2000 to 2012, despite the increasing total number of deaths in this time period. Based on diagnosis information (ii), between 60% and 75% of decedents were identified as having palliative care needs.

Conclusions: This work demonstrates the usefulness of administrative data for identification of palliative care needs in Ontario, and provides evidence to support health system measurement and planning of palliative care services in the province.

Keywords: palliative care; cause of death; chronic diseases; patient population; system level planning

Themes: Person-Centred Care; Health System Improvements & Innovations; Health Services Delivery

P35

BEARING THE FINANCIAL BURDEN OF CANCER CARE: FINANCIAL TOXICITY IN A PUBLIC PAYER SYSTEM

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Purpose: In contemporary cancer care, financial distress is increasingly recognized as a clinically relevant patient-reported outcome. This study uses the validated Comprehensive Score for Financial Toxicity (COST) instrument to assess financial toxicity (FT) in advanced cancer patients.

Methods: Patients with lung or renal cell cancer were recruited from outpatient clinics at the Princess Margaret Hospital. FT was measured with COST, an 11-item survey scored from 0-44 with lower scores reflecting worse financial well-being. Data on patient characteristics, out-of-pocket costs (OOP) and extended insurance coverage (EIC) was collected. Associations between variables and COST score (COST) was evaluated using multivariable analyses.

Results: One-hundred and seventy-seven patients were approached, of whom 136 (77%) agreed to participate (45% male, median age 63 yrs). Median COST was 21 (range: 2-44). COST was correlated with age (correlation coefficient [r] = 0.42; P<0.0001), with younger patients reporting greater FT (P<0.0001). Employed patients or those receiving pension income reported less FT than unemployed patients (26.5 vs. 21.5 vs. 17.0, respectively; P=0.0003). Less FT occurred in patients with EIC, compared to those without EIC (P=0.03). Patients with higher OOP reported more FT (P=0.0004). In linear regression analysis, only age was a predictor of FT, when adjusting for income and employment status (for every 10-yr age increase, COST improved by 4.2; P<0.0001).

Conclusions: Age is a predictor of FT when adjusting for income and employment status, with younger patients reporting greater financial distress. This study highlights priority patient populations where FT should be a significant patient-reported outcome to routinely assess.

Keywords: financial toxicity; patient-reported outcome

Themes: Health System Improvements & Innovations; Health Services Delivery

P36 – PALLIATIVE CARE POSTER WALK

DEVELOPING ACCESSIBLE ANALYTICS PRODUCTS ON LINKED POPULATION-LEVEL DATA IN REGIONAL PROFILE TOOL FORMAT: A HEALTH SYSTEM PLANNING PERSPECTIVE

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Purpose: To provide health system planners with user-friendly descriptive tools that make linked population-level data accessible in areas where no Ontario-level registries exists. Tools like Dementia and OPCN regional profile tool (RPT) enable stakeholders to study the population from multiple perspectives, using their characteristics and health service utilization longitudinally for health system planning purposes.

Methods: The dementia and OPCN data repositories were built by linking several health administrative datasets and employing common definitions based on the validated case ascertainment algorithms. The repositories enable historical data analyses and predictive modelling to investigate populations of interest and their health service usage. In order to make insights from the repositories accessible, user-friendly RPTs were built considering information design principles, bringing historical and future state analyses results together at the Ontario, LHIN, and sub-region levels.

Results: The dementia RPT supports the Capacity Planning and Priorities branch of the MOHLTC to implement a new capacity planning framework. The tool was recently released to LHIN planners to inform their community services planning for dementia. The OPCN RPT was released to LHINs, providing a comprehensive current state assessment of palliative care service use and variation across Ontario. Both tools have a release planned for 2018 that will include refreshed data, and additional metrics and features.

Conclusions: To enable local planning across sectors of care, it is essential to link multiple health datasets and use consistent definitions and validated algorithms. Benefits are best realised when the data is made accessible to all planners, in a user-friendly format.

Keywords: population data linkage; capacity planning; advanced analytics; information design

Themes: Person-Centred Care; Health System Improvements & Innovations; Health System Capacity Planning; Health Services Delivery; Best Evidence

P37

CANCER SURVIVORS IN ONTARIO: WHO ARE THEY AND WHERE ARE THEY RECEIVING THEIR FOLLOW-UP CARE?

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Purpose: The number of cancer survivors in Ontario has grown rapidly due to increasing incidence and advances in screening, diagnostic technologies and treatment. However, we lack data for planning, monitoring, and improving follow-up care for survivors. We developed a survivorship cohort that can be linked to administrative data to provide these data.

Methods: Patients aged 18 and older with a cancer diagnosis recorded on the Ontario Cancer Registry (1964 to 2017) were considered survivors if they were alive, finished their initial treatment and were treatment-free during the study period. Stage IV and complex malignant haematology cancer patients were excluded. We linked the 2016 cohort of survivors to the administrative data to determine demographic characteristics and the percentage of survivors seeing a medical or radiation oncologist (MO/RO) in follow-up years one to five.

Results: In 2016, there were approximately 433,000 cancer survivors in Ontario: 72% were between the ages of 55 and 84, 55% were female, 67% had survived for greater than 5 years, and 33% lived in the Greater Toronto Area. Of those who had seen an MO or RO in their diagnosis year, 60% saw an MO and 56% saw an RO in the first follow-up year, dropping to 36% and 27%, respectively, in the fifth follow-up year.

Conclusions: The cancer survivor cohort has enabled us to produce data on a previously unidentified patient population. Linking this cohort with administrative data will enable further examination of visit trajectories as well as cancer and non-cancer health outcomes.

Keywords: cancer; survivors; follow-up care; administrative data

Themes: Integrated Care; Health System Improvements & Innovations;
Health Services Delivery; Best Evidence

P38

PROVINCIAL ADOPTION OF A PROSTATE CANCER PATIENT-REPORTED OUTCOME (PRO) TOOL: RESULTS AND LESSONS LEARNED FROM A STAGGERED IMPLEMENTATION AND EVALUATION

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Purpose: The Expanded Prostate Cancer Index Composite for Clinical Practice (EPIC-CP) is being implemented across Ontario Regional Cancer Programs (RCPs) using a staggered approach. This enables a parallel staggered formative and summative evaluation, where lessons learned from early implementers informs improvements in both evaluated regions and those preparing to implement. The purpose is to report formative evaluation results (early implementers) and lessons learned from this approach.

Methods: Questionnaires were developed to capture patient and provider experiences with EPIC-CP, and refined following cognitive testing and review of mock data. Participants from three RCPs (early implementers) completed questionnaires. Evaluation challenges and strategies were discussed through regular communication with RCPs. Lessons learned from early implementers informed the design and execution for subsequent implementers.

Results: Participants included providers (n=25) and patients (n=135). Providers reported challenges with data flow (26% reported timely receipt of EPIC-CP results for clinical use) and symptom management (28% reported low confidence in treating sexual function). 86% of patients reported that EPIC-CP improved symptom communication with providers; 65% reported sufficient support to complete it and 18% reported being uncertain whether their care team looks at results. RCPs reported challenges with participant recruitment.

Conclusions: Results highlight improvement opportunities, specifically, infrastructure to support data flow, symptom management resources and provider education, and patient support to complete EPIC-CP. Refinements were made to condense questionnaires and participant recruitment strategies were introduced for subsequent implementers. A staggered evaluation can facilitate timely improvements for both current and later implementers.

Keywords: PROs; person-centred; EPIC; implementation; evaluation

Themes: Person-Centred Care; Health System Improvements & Innovations; Health Services Delivery

P39

WAIT TIME TO SURGERY AND SURVIVAL AMONG ONTARIO CANCER PATIENTS

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Purpose: In Ontario cancer surgeries are prioritized based on urgency. Understanding and tracking the impact of wait times to surgery on survival can identify opportunities for prevention, motivate changes in clinical practice and provide information on the effectiveness of the current prioritization approach. This analysis examined wait time to surgery and associations with survival.

Methods: Data on all cases of surgical breast, colorectal, esophageal, lung, oral cavity & pharynx, ovarian and pancreatic cancer diagnosed between 2011 and 2015 were extracted from the Ontario Cancer Registry and linked to the Wait Times Information System. All analysis was done in SAS v 9.2 using a modified Dickman algorithm.

Results: Median wait time varied from 16 days for breast and esophageal cancer to 20 days for oral cavity & pharynx cancer. The majority of cases were assigned priority level III (surgery recommended within 28 days) and received treatment within the recommended time. Among the most urgent cases examined, lung cancers were the most likely to receive surgery within the recommended time and ovarian cases were the least. For breast and esophageal cancers there was no significant difference in five-year observed survival based on wait time. For the remaining five cancer types, patients with shorter wait times experienced poorer survival.

Conclusions: The results of this exploratory analysis confirm the appropriateness of the current wait time prioritization approach. While a small proportion of patients are waiting longer than recommended, survival outcomes are similar regardless of wait times, indicating that wait times are being managed efficiently.

Keywords: cancer; survival; wait time; surgery

Themes: Integrated Care; Health System Improvements & Innovations; Population Health; Health Services Delivery; Value Determination

P40

IS THERE A DIFFERENCE IN COMPLETION RATES? PILOT VERSUS PROVINCIAL IMPLEMENTATION OF EXPANDED PROSTATE CANCER INDEX COMPOSITE FOR CLINICAL PRACTICE (EPIC-CP) IN ONTARIO

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Purpose: The first disease-specific oncology patient-reported outcome (PRO) for prostate cancer patients (EPIC-CP) was piloted in 2014. The EPIC-CP is a 16-item validated symptom screening tool discussing sexual function, vitality, urinary & bowel problems. The EPIC-CP pilot was implemented along with support tools/resources in four Regional Cancer Centres (RCCs), and province-wide in 2016. The objective of this analysis is to examine whether the EPIC-CP completion rates for the pilot (May-November 2014) and provincial implementation (October 2016 - November 2017 in 11 RCCs) were statistically significant.

Methods: Target population for the EPIC-CP was early-stage prostate cancer patients undergoing radiation or surgery. The hypothesis was that there would be no difference in question completion rates between implementations; since the pilot was structured to be generalizable and process improvements were made before provincial roll-out. To examine variances in completion rates by question, hierarchical logistic regression models (implemented in PROC GLIMMIX, SAS 9.4) were applied.

Results: A total of 928 EPIC-CP assessments (n=332 patients) were completed during the pilot, compared to 10,801 (n=5807 patients) in the provincial implementation. Provincial completion rates were lower than corresponding pilot results (ranging 2.7% to 7.3%), which resulted in a statistically significant decrease in all EPIC-CP inventory questions (all ps <0.001). The largest decrease was observed for "hot flashes/breast symptoms" (96.9% vs. 90.4%, respectively; t(5677)=5.97, p<0.001) and "overall sexual function" domains (91.9% vs. 84.7%, respectively, t(5677)=5.33, p<0.001).

Conclusions: The decrease in EPIC-CP question completion rates is undesirable and indicates the need for further investigation into factors associated with question completion.

Keywords: prostate cancer; patient-reported outcome; quality of life; outcome assessment

Themes: Health System Improvements & Innovations; Health Services Delivery

P41 – ELEVATOR PITCH

PATIENT REPORTED EXPERIENCE OF SHARED DECISION-MAKING OF PATIENTS IN MULTI-CARE KIDNEY CLINICS OR RECENTLY STARTED DIALYSIS

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Purpose: Patients with chronic kidney disease nearing or recently starting dialysis are faced with medical decisions that should be heavily influenced by their values and preference where a shared decision may be particularly valuable.

Methods: ORN administered a modified version of a shared decision-making questionnaire to all patients in Ontario who were registered in a multi-care kidney clinic for at least six months or had started dialysis within three to six months via a third-party vendor. The survey was the Shared Decision-Making 9 Question instrument (SDM-9) modified to specifically comment on kidney care providers. The SDM-9 is structured with early questions regarding initial components of making a shared decision and later questions regarding more complicated components. We added five questions regarding self-rated knowledge for renal replacement therapy options including conservative care. Response were made on a six-point scale anchored at completely disagree (0) and completely agree (5). The survey was available in English and French and could be completed on paper and returned via a pre-paid envelope, online, or via phone.

Results: Of the 8325 surveys delivered, we received responses from 1440 (17.3%). 1323 of the respondents were in multi-care clinics and 117 recently started dialysis. The mean score for the SDM-9 was 3.8 out of 5. The mean score of the first two questions was 4 while the score for the last two questions was 3.3. There was evidence of significant variation in scores of the last two questions by dialysis program. Participants perceived knowledge of dialysis modalities varied significantly by modality.

Conclusions: Patients in multi-care kidney clinics and who recently started dialysis generally feel they are involved in shared decision making. However, their knowledge of renal replacement therapies varies suggesting further work to fully engage them is necessary.

Keywords: CKD patients; shared-decision making

Themes: Person-Centred Care; Health Services Delivery

P42 – ELEVATOR PITCH

A VALIDATED ALGORITHM FOR THE IDENTIFICATION OF A NEW OUTCOME MEASURE FROM ADMINISTRATIVE DATA: THE BREAST CANCER RECURRENCE PROJECT

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Purpose: Cancer recurrence is an important clinical outcome measure, particularly for cancers with low mortality rates. It is not routinely reported in Cancer Registries or other large administrative datasets which are generally service specific. We conducted a study to determine the feasibility of creating a validated algorithm to identify cases of breast cancer recurrence from provincial level administrative data linked around individual patients and across the cancer journey.

Methods: From the Ontario Cancer Registry, we identified cases of primary breast cancer stage 0-III diagnosed between January 2009 and December 2012, and alive 6 months from diagnosis. We developed clinical rules that were applied iteratively to data from provincial death, billing, treatment and hospital inpatient and outpatient records during the period of observation until December 2012. We validated the algorithm's ability to identify individual instances of recurrence in a sample of 3265 patient charts from two large regional cancer centres.

Results: The overall rate of recurrence determined by the algorithm was 15(14.3-15.7)%. Validation by chart audit showed an overall accuracy of the algorithm in predicting recurrences/nonrecurrences of 0.89 (sensitivity 0.78, specificity 0.91, PPV 0.55, NPV 0.97). Treatment data were more effective than hospital data in improving the sensitivity of the algorithm with little effect on specificity.

Conclusions: Linking administrative data across the cancer journey for identification of new outcome measures is feasible and provides sufficient accuracy for system monitoring. Discrepant cases identified by the chart audit are being reviewed to update the algorithm and optimize performance.

Keywords: recurrence; breast cancer; algorithm

Themes: Health System Improvements & Innovations; Health Services Delivery

P43 – EQUITY POSTER WALK

HEALTH INEQUITIES/DISPARITIES IN RECEIPT OF CANCER CARE IN COUNTRIES WITH UNIVERSAL HEALTH SYSTEMS

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Purpose: Equity is one of six overarching goals of the Ontario Cancer Plan IV. The purpose of this study was to synthesize current knowledge on inequities/disparities in receipt of cancer care in countries with Universal Health care to guide future Cancer Care Ontario work on identifying and reducing health inequities in cancer care in Ontario.

Methods: We conducted a literature review of published studies focused on inequities/disparities in receipt of cancer care in countries with Universal Health care from the point of diagnosis onwards using PubMed and Google Scholar. Studies deemed relevant for inclusion underwent systematic data extraction to identify equity stratifiers, phase in the cancer care continuum, disease site and country of research. Results were synthesized and organized into themes.

Results: The literature identified inequities in receipt of cancer care in access, treatment and outcomes. The most common social determinants of health examined in relation to inequities were socio-economic status (SES), distance to specialty services, mental health or other disabilities/comorbidities and ethnicity/race. In terms of cancer site, breast cancer was most commonly examined in inequity-related research, followed by lung and colorectal. It was found that later stage at diagnosis, different or no treatment, access to PSO and rehab services, patient experience and survivorship were negatively impacted by the social determinants of health examined.

Conclusions: The results of this review can be used to examine the Ontario population and regional variations in inequities in receipt of cancer care found in other jurisdictions and can inform the development of policies and programs in cancer care.

Keywords: cancer; inequity; disparity; social determinants

Themes: Person-Centred Care; Health System Improvements & Innovations; Health Equity; Population Health; Health Services Delivery

P44

PERSONAL SUPPORT WORKER (PSW) ASSISTED HOME HEMODIALYSIS (HHD) AMONG 8 PILOT PROGRAMS IN ONTARIO

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Purpose: Increasing the uptake of home dialysis is a strategic priority of the Ontario Renal Network (ORN). Dialyzing at home is associated with a higher quality of life and improved symptom control. Barriers to the adoption of home hemodialysis (HHD) include: patient inability to manage HHD independently; psychological barriers such as fear of catastrophic events; concerns about burdening family; and/or lack of available support. This pilot project utilized Personal Support Workers (PSWs) to support patients who required additional assistance to dialyze at home.

Methods: The ORN funded 8 Regional Renal Programs (RRPs) to provide PSW-assisted HHD. PSWs were trained in a manner consistent to that of independent HHD patients. Patient information was collected via the Ontario Renal Reporting System. Patients, PSWs, nurses and administrators were surveyed to gather feedback on patient experience and outcomes, model feasibility, training success, safety, and monitoring and support processes (e.g. including ongoing focus groups to obtain information about project progress).

Results: Between October 2015 and November 2017, approximately 65 patients participated in the PSW-assisted HHD project. As of December 2017, 28 prevalent patients were actively receiving PSW-assisted HHD. Patients and staff reported high satisfaction scores. Rates of HHD increased by 0.1% to 2.2% across the 8 RRP's due to PSW-assisted HHD since the implementation of the project. The main challenge of the pilot was the PSW turnover rate (41%).

Conclusions: Successful implementation of a PSW-assisted HHD was achieved across 8 RRP's in Ontario. PSW-assisted HHD appears to be a promising model of care to increase uptake of HHD.

Keywords: personal support workers; home hemodialysis; end-stage renal disease; home dialysis; assisted dialysis

Themes: Person-Centred Care; Value for Money; Health System Improvements & Innovations; Health Services Delivery; Value Determination

P45

VARIATION IN INTENSIVE CARE UNIT UTILIZATION AND ITS IMPACT ON FUNDING

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Purpose: Ontario's Quality-Based Procedure funding policy remunerates some hospital care on a per-case basis. Cases with Intensive Care Unit (ICU) use receive a higher weight and payment. ICU use is a supply-sensitive service possibly driven by provider behaviour. This funding policy research evaluates variation in payments attributable to ICU utilization.

Methods: Cancer Care Ontario remunerates hospitals for cancer surgeries on a volume x price x average cost weight basis. The Canadian Institute for Health Information's (CIHI) resource intensity weight (RIW) methodology for Ontario inpatient stays was replicated. To measure the impact on payments, the amount that ICU utilization contributes to patients' RIWs for each hospital was calculated. To assess whether variation could be attributed to demographics, age and sex standardized utilization rates were calculated. To measure whether there was an association between ICU use and indicators of care quality, 30 day readmissions and 30 day ER visits were calculated.

Results: There is significant variation in ICU utilization across hospitals that is independent of quality care. For colorectal cancer surgery, there is a five-fold difference in age- and sex-adjusted rates of ICU use. ICU utilization is significantly higher amongst small and medium hospitals than larger hospitals. Policy options to address unwarranted variation are explored.

Conclusions: CIHI's current methodology for calculating RIWs and Ontario's use of these weights in calculating hospital payments are affected by variation in provider-driven ICU use, and unassociated with higher quality care. Ontario's current funding policy of paying for unwarranted variation in hospital care should be reevaluated.

Keywords: Intensive Care Unit (ICU); cancer surgery; health care utilization; funding policy

Themes: Value for Money; Value Determination

P46

FEASIBILITY OF USING ADVANCED SAS PROGRAMMING AND eMARC DATA TO DETERMINE ADENOMA DETECTION RATE

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Purpose: Patients of endoscopists with lower adenoma detection rates (ADR) are more likely to die from missed colorectal cancers. Measuring ADR is challenging at the system level as pathology results are generally reported in unstructured electronic medical records. Natural language processing (NLP) can be used to extract relevant information from text-based records. We assessed the sensitivity and specificity of an NLP algorithm to identify colorectal adenomas in unstructured electronic pathology reports available in Cancer Care Ontario's eMaRC data.

Methods: Pathology reports pertaining to colonoscopy in eMaRC were defined as those with specimen type 'biopsy' and anatomic site 'colon'. The sampling frame was restricted to 2015-16 and patients older than 50 years. From this sampling frame, two random samples of 450 and 1000 reports were selected as the test and validation sets respectively. Expert clinicians reviewed and classified reports as adenoma or other. The test set was used to develop an NLP algorithm to identify adenomas using Base SAS 9.4. The sensitivity and specificity of the NLP algorithm compared to clinician review were determined.

Results: The sensitivity of the NLP algorithm was 100% (95 %CI: 98.51-100) and 99.81% (95 %CI: 98.97-100) in the test and validation sets respectively. Similarly, the specificity was 99.08% (95 %CI: 94.99-99.98) and 100% (95 %CI: 99.21-100).

Conclusions: Our NLP algorithm to identify colorectal adenomas from eMaRC is highly accurate. This work lays the foundation for reporting ADR as a colonoscopy quality indicator in Ontario.

Keywords: adenoma detection rate; quality indicator; colonoscopy; natural language processing

Themes: Value for Money; Integrated Care; Health System Improvements & Innovations; Value Determination

P47

COMMUNITY-LED, POPULATION BASED CHRONIC KIDNEY DISEASE AND DIABETES MELLITUS SCREENING IN WIKWEMIKONG UNCEDED FIRST NATION

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Purpose: In Canada, First Nations peoples (the descendants of the original inhabitants of Canada) face a significantly higher risk of morbidity and mortality due to chronic kidney disease (CKD). The Ontario Renal Network (ORN) facilitated a screening and intervention project in the Wikwemikong Unceded First Nation with the purpose of identifying community members most-at-risk, and to support activities focused on the delay or prevention of CKD and progression to end-stage renal disease (ESRD).

Methods: The ORN and Health Sciences North partnered with the community to establish a screening clinic offering point-of-care testing for CKD and determination of ESRD risk based on the Kidney Failure Risk Equation. Screened individuals were referred to services within the community based on their risk level and other disease risk factors (e.g. diabetes mellitus or hypertension). The community led all promotional activities, including screening at major events (e.g. pow-wows, homecomings) and a development of a promotional video involving the Chief and Health Director.

Results: Screening in the community was successful; target volume was exceeded. In all, 504 people were screened; complete data was available on 484 First Nations peoples; 30 were newly identified as meeting the diagnostic criteria for diabetes or pre-diabetes; 25 were newly identified with early stage CKD. All individuals have received follow-up care and are currently being supported in their home community.

Conclusions: Point-of-care testing is an effective and cost-effective approach to support community-based screening and management of chronic disease in First Nations communities. Community integration and ongoing relationship development with First Nations' and regional program leadership are essential to ensure effectiveness of screening interventions, and foster buy-in and adoption of new approaches to service delivery.

Keywords: screening; indigenous; chronic kidney disease; prevention; diabetes

Themes: Person-Centred Care; Value for Money; Prevention of Chronic Disease; Health System Improvements & Innovations; Population Health; Health Services Delivery; Value Determination

P48

USING REAL-WORLD DATA TO CONFRONT A REAL-WORLD PROBLEM: THE IMPACT OF SMOKING ON HEALTHCARE COSTS AMONG CANCER PATIENTS IN ONTARIO

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Purpose: We conducted an economic analysis to examine the impact of smoking on healthcare costs among newly diagnosed adult cancer patients in Ontario, Canada. Specifically, we compared healthcare costs of cancer patients who were current smokers to those of non-smokers from the public healthcare payer perspective.

Methods: This population-based cohort study used administrative databases at Cancer Care Ontario and Institute for Clinical Evaluative Sciences from April 1, 2014, to March 31, 2016 (with 1 year follow-up). We included costs of health services such as hospitalizations, emergency room visits, drugs, home care services, and physician services (from time of diagnosis). Using a generalized linear model (with log link and gamma distribution, adjusting for age, sex, income, rurality, stage, site, geographical region, and comorbidity), we estimated the cost difference between groups by recycled predictive methods.

Results: There were 3,606 smokers and 14,911 non-smokers. Smokers were significantly younger (61 vs 65 years), more likely to be male (53%), lived in poorer neighbourhoods, had more advanced cancer stage, and were more likely to die within one year post-diagnosis, compared non-smokers. In our regression model, on average, smokers had significantly higher monthly healthcare costs (\$5,091) compared to non-smokers (\$4,847), $p < 0.05$.

Conclusions: Smoking status has a significant impact on healthcare costs among cancer patients. On average, smokers incurred higher healthcare costs than non-smokers. These findings support the need for evidence-based smoking cessation programs for cancer patients as they have the potential to improve patients' outcomes and reduce the economic burden of smoking on the healthcare system.

Keywords: smoking; tobacco; healthcare cost; economic burden

Themes: Value for Money; Population Health; Best Evidence

P49

IMPROVING THE SAFETY AND QUALITY OF SYSTEMIC TREATMENT REGIMENS IN COMPUTERIZED PRESCRIBER ORDER ENTRY (CPOE) SYSTEMS

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Purpose: Systemic treatment computerized prescriber order entry (ST-CPOE) and pre-printed orders (PPO) are proven to reduce errors. There is no known guidance in oncology to facilitate high quality, accurate regimen development and review; hence, this was identified as a system-wide gap. This provincial initiative aimed to improve the quality of oncology regimens through a comprehensive review of ST regimens and the development of standards.

Methods: A system-wide analysis of all active regimens to ensure they were built as intended was conducted. 35 hospitals (on behalf of 75 treatment facilities) were asked to report any unintentional discrepancies and details of the maintenance review process. Discrepancies were compiled, categorized, and analyzed for potential to cause harm. In addition, a multidisciplinary expert working group was formed to create best practice recommendations.

Results: The review yielded a 94% response rate. The average number of regimens reviewed was 336 (range 15-700; n=9). Unintentional discrepancies were reported by 9 hospitals (27%). A total of 369 discrepancies were reported (average 55 per hospital) with 28 deemed to have a moderate potential for harm. Only 2 hospitals (6%) had an established maintenance process; now, all have standard processes for review. Consensus-based recommendations for ST-CPOE and PPO regimen development and maintenance were developed.

Conclusions: The review identified unintentional discrepancies and, due to the potential for patient harm, corrective action has been taken. Identified discrepancies have been amended and standard regimen development and maintenance review processes are now implemented to improve the quality and safety of systemic treatment delivery.

Keywords: systemic treatment; computerized prescriber order entry (CPOE) systems; regimen development; regimen review; pre-printed orders

Themes: Health System Improvements & Innovations; Health Services Delivery; Best Evidence

P50 – ELEVATOR PITCH

ELIGIBILITY CRITERIA FOR CANCER CARE ONTARIO'S LUNG CANCER SCREENING PILOT FOR PEOPLE AT HIGH RISK

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Purpose: To determine eligibility criteria for screening in Cancer Care Ontario's Lung Cancer Screening Pilot for People at High Risk.

Methods: MISCAN-lung microsimulation modeling assessed expected outcomes of numerous screening scenarios with eligibility based on varying ages, smoking exposures, and times since smoking cessation. The preferred MISCAN scenario was compared to the lung cancer risk prediction model developed by Tammemägi et al, known as PLCOM2012, on the basis of how it performed in identifying people from a cohort of smokers who went on to develop lung cancer. The impact of removing the race/ethnicity predictor on the predictive performance of PLCOM2012 was assessed. An expert panel convened by Cancer Care Ontario considered these two approaches to determining eligibility for the pilot.

Results: The preferred MISCAN scenario includes people aged 55 to 74, with ≥ 40 pack-years and ≤ 10 years since smoking cessation. Applying PLCOM2012 with a risk threshold of 2.1% selected the same number of individuals from the cohort as that scenario. PLCOM2012 identified 68% of individuals in the cohort who developed lung cancer, compared to 60% identified by the MISCAN scenario. Removal of the race/ethnicity predictor from PLCOM2012 had no meaningful impact on predictive performance (model version known as PLCOM2012noRace). The expert panel unanimously endorsed use of the risk prediction model for the pilot.

Conclusions: Individuals aged 55 to 74 who, based on the PLCOM2012noRace prediction model, have a $\geq 2.0\%$ risk of developing lung cancer in the next 6 years will be eligible for screening in the pilot.: The objective of this work is to identify key concepts and processes required to describe, implement, evaluate, and sustain new models of care.

Keywords: lung cancer screening; pilot; eligibility criteria

Themes: Health System Improvements & Innovations; Best Evidence

P51

VARIATION IN THE CANCER PATIENT EXPERIENCE BY SEX, AGE, AND DISEASE SITE

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Purpose: With an increasing focus on improving the patient experience in cancer care, there is a growing need to gain an in-depth understanding of the patient experience, to drive improvements in care delivery. Your Voice Matters (YVM), a 28-item cross-sectional patient experience survey for cancer outpatients undergoing treatment in Ontario. The objective was to examine demographic differences of the patient experience, including the overall experience with the most recent outpatient cancer visit.

Methods: YVM was administered to adult cancer outpatients at 13 Regional Cancer Centres, in Ontario, between April and September 2017. Respondents answered a series of questions including, 'Your overall experience with your last visit', on a five-point Likert scale. Positive responses (4 and 5) were stratified by sex, age, and disease site. Significance testing was conducted using the chi-square test of independence, followed by post hoc Tukey ($p < 0.05$).

Results: 12,160 surveys were included in this analysis. Men responded significantly more positively than women for many of the questions, and this was the case when reflecting on "Your overall experience with your last visit" ($p < 0.001$). Patients over the age of 65 responded significantly more positively than patients under 65 on many questions, including the overall experience question ($p < 0.001$). Patients with genitourinary cancers responded significantly more positively than those with breast and gynecological cancers ($p < 0.001$) when reflecting on their overall experience with their last visit.

Conclusions: The overall patient experience with the last adult outpatient cancer treatment visit in Ontario varies by demographic characteristics. Future quality improvement initiatives should consider examining demographic characteristic to better understand the populations we serve in order to create a more tailored approach to improving the overall patient experience.

Keywords: person-centred care; patient experience; equity; quality improvement

Themes: Person-Centred Care; Health Services Delivery

P52

THE SYMPTOM PROFILE OF HEMODIALYSIS PATIENTS IN ONTARIO

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Purpose: People requiring dialysis reportedly experience a high symptom burden. However, there are few large studies assessing symptoms of this patient population over time. The Ontario Renal Network (ORN) is pilot testing a standardized provincial approach to symptom screening, assessment, and management using the Edmonton Symptom Assessment System Revised: Renal (ESAS-r:Renal). The objective is to describe the symptom profile of in-facility hemodialysis patients in Ontario using ESAS-r:Renal.

Methods: Eight Regional Renal Programs in Ontario were selected to participate in a one year pilot project. Participating programs routinely assess patients undergoing in-facility hemodialysis with ESAS-r:Renal every 4-6 weeks. The ESAS-r:Renal questionnaire asks patients to self-report the severity of 12 symptoms between 0 (no symptom) and 10 (worst possible symptom).

Results: Between April 1 and October 31, 2017, there were 4,536 screening attempts on 1,224 patients with 90% of the questionnaires fully completed and 5% partially completed. Forty-three percent of patients were female, 47% had diabetes (Type 1 or 2), and 31% were on dialysis for 5 or more years. Tiredness was the most common symptom reported (78% of all surveys) and nausea was the least reported (27% of all surveys). Scores of 7 or greater were recorded frequently (pain [14%], tiredness [23%], drowsiness [13%], nausea [4%], poor appetite [7%], shortness of breath [6%], depression [8%], anxiety [6%], poor wellbeing [11%], itching [13%], problems sleeping [17%], and restless legs [14%]).

Conclusions: Patients receiving in-facility dialysis frequently have symptoms. The degree to which the symptoms reported through ESAS-r:Renal can be modified and improved requires further research.

Keywords: renal; in-facility hemodialysis; symptom profile

Themes: Person-Centred Care; Health Services Delivery

P53

A NEW INITIATIVE TO MEASURE THE PROVINCIAL RATE OF CATHETER-RELATED BACTEREMIA IN ONTARIO

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Purpose: The use of a Central Venous Catheter (CVC) is associated with high morbidity and mortality, in part due to increased risk of catheter-related bacteremia (CRB). In 2016, the Ontario Renal Network launched a provincial quality improvement (QI) initiative with the aim to shift from local monitoring of CRB rates to a province-wide standardized tracking system.

Methods: All 26 RRP in Ontario collected and reported data from May 2016-June 2017 using a tracking tool incorporating indicator methodology developed by an expert panel. Reported CRB events formed the numerator for the rate calculation, while the denominator was derived from the Ontario Renal Reporting System database (ORRS) to calculate person-time with a hemodialysis catheter. The CRB rate is expressed as infections per 1000 patient days, combining patient-time from all in-centre chronic dialysis patients at each RRP.

Results: Over a period of 14 months, 460 unique CRB cases were reported over a total of 2,135,250 patient days (5850 annualized patients). Program-level CRB rates ranged from 0.08-0.39 and the provincial average was 0.22 episodes/1000 catheter-days. Quarterly reports were shared with the programs for comparison and monitoring purposes. This allowed programs to benchmark themselves against their peers, and design local plans for improvement.

Conclusions: The risk of CRB is deemed to be relatively low in Ontario. This initiative has produced a sustainable system of data collection for monitoring the risk of CRB. This initiative is part of a larger strategy to ensure that all patients receiving dialysis experience as few complications as possible.

Keywords: catheter-related bacteremia; dialysis; chronic kidney disease; catheter infection; central venous catheter

Themes: Person-Centred Care; Prevention of Chronic Disease; Health System Improvements & Innovations; Health Services Delivery

P54

ESTIMATING THE NEED FOR CANCER GENETIC COUNSELLORS IN ONTARIO

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Purpose: Long wait-times and expanding indications for cancer genetic counselling services in Ontario spurred Cancer Care Ontario (CCO) to estimate the magnitude of the problem. This project aims to develop a data-driven model to estimate the number of cancer genetic counsellors required in Ontario.

Methods: The need for cancer genetic counselling services was estimated by examining the current indications and calculating the proportion of the cancer incidence eligible for genetic counselling services. The proportion eligible was derived from epidemiological estimates and via clinical expert judgments, depending on data availability. Family members per patient requiring genetic counselling services was estimated by clinical expert judgments. Combined, the number of persons requiring genetic counselling services in a year was estimated. A province-wide survey was conducted to gather information about the current state of cancer genetic counselling services in Ontario. Estimates for the number current clinical FTEs and workload per FTE were determined via the survey.

Results: In 2016, Ontario required 106.1 genetic counsellor FTE to meet the need for cancer related genetic counselling. Based on the provincial survey, there were 43.4 FTE (41% of the need) genetic counsellors in Ontario dedicated to cancer genetics, corresponding to an unmet need of 62.7 cancer genetic counsellor FTEs. This is a lower bound estimate of the need as this was based on incident cases.

Conclusions: This work highlights the magnitude of the unmet need for genetic counsellors in Ontario and will support recommendations to the Ministry of Health for increased investments into the genetic counselling system in Ontario.

Keywords: health human resources; genetic counselling; planning

Themes: Integrated Care; Health Services Delivery

P55

REASONS FOR LACK OF FOLLOW-UP COLONOSCOPY AMONG PERSONS WITH A POSITIVE FECAL OCCULT BLOOD TEST RESULT FOR COLORECTAL CANCER SCREENING: QUALITATIVE FINDINGS FROM ONTARIO

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Purpose: In Ontario, follow-up colonoscopy rates among persons with a positive guaiac fecal occult blood test result (gFOBT+) remain suboptimal. Primary care providers (PCPs) are responsible for arranging follow-up. The objectives were to understand the reasons for a lack of follow-up colonoscopy and any action plans to address follow-up.

Methods: Semi-structured interviews were conducted with 30 gFOBT+ persons and 30 PCPs. Eligible gFOBT+ persons were identified through administrative databases and included those aged 50-74, with a 6-12 month old gFOBT+, no follow-up colonoscopy within six months, and no prior colorectal cancer diagnosis or colectomy. Eligible PCPs had ≥ 1 rostered gFOBT+ person without follow-up colonoscopy. Transcripts were analyzed inductively using Nvivo 11 (QSR International Pty Ltd., 2015).

Results: Reasons for lack of follow-up colonoscopy were: person and/or provider believed the gFOBT+ was a false positive; person was afraid of colonoscopy; person had other health issues; and breakdown in communication of gFOBT+ results or colonoscopy appointments. PCPs who initially recommended follow-up colonoscopy did not change the minds of the persons who dismissed the gFOBT+ as a false positive and/or who were afraid of the procedure. Instead, PCPs allowed these gFOBT+ persons to negotiate an alternative follow-up action plan including repeating the gFOBT or not following up.

Conclusions: PCPs may not be able to adequately counsel gFOBT+ persons who believe the gFOBT+ is a false positive and/or fear colonoscopy. PCPs may lack fail-safe systems to communicate gFOBT+ results and colonoscopy appointments. Using trained navigators may help address these barriers and increase follow-up rates.

Keywords: colorectal cancer screening; adherence to follow-up care; qualitative research; primary care

Themes: Person-Centred Care; Integrated Care; Health System Improvements & Innovations; Population Health; Health Services Delivery

P56 – ELEVATOR PITCH

AN INNOVATIVE METHODOLOGICAL APPROACH FOR THE EVALUATION OF BREAST CANCER DIAGNOSTIC ASSESSMENT PROCESSES IN ONTARIO

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Purpose: The breast cancer diagnostic process can include many tests and consultations and often provokes considerable patient anxiety. Inappropriate testing and long wait times may waste resources and result in poorer outcomes. Recent findings show longer breast cancer time intervals in Ontario than comparable jurisdictions. We used an innovative administrative data-based approach for calculating the breast cancer diagnostic interval and interval activity to describe the experience of Ontario breast cancer patients with a view to developing a knowledge infrastructure for program and policy development and system monitoring.

Methods: ICES data were used to create a dataset describing the diagnostic process for all breast cancer patients diagnosed in Ontario from 2007 through 2015. Using a signal versus noise approach, we identified each patient's first cancer-related healthcare contact, including those that resulted in a provisional or misdiagnosis. These first contacts form the starting point for calculating the length of the diagnostic process and for identification of diagnostic cancer-related activity.

Results: We will present details of the methodology and initial descriptive results of the diagnostic process length and activity levels. These results will be presented by detection method (screened versus non-screened patients) and by whether the patient was diagnosed in an institution containing a Breast Assessment Site.

Conclusions: This integrated knowledge translation work will enhance our understanding of diagnostic assessment processes in Ontario to identify areas for improvement. Ongoing use of the approach as part of routine quality monitoring has the potential to improve access to high quality, efficient diagnostic processes for all Ontarians.

Keywords: breast cancer; diagnostic interval; diagnostic pathways; research methods; healthcare access

Themes: Health System Improvements & Innovations; Health Services Delivery

P57

EXPLORING PATIENT ENGAGEMENT FOR WOMEN WITH DUCTAL CARCINOMA IN SITU: A QUALITATIVE STUDY

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Purpose: Ductal carcinoma in situ (DCIS) is benign in most cases but surgery and adjuvant therapy are standard. As a result, patients experience similar anxiety to those with invasive breast cancer. Person-centred care (PCC) improves health care experiences and outcomes. This study explored how to improve PCC for DCIS.

Methods: Clinicians who manage DCIS were interviewed about communication and decision-making practices and challenges, and the support they needed to achieve PCC. Patients treated for DCIS were asked during in-person focus groups about communication and decision-making experiences, and how PCC could be improved in the future. Sampling for both groups was purposive by province; clinicians were sampled by specialty. Themes were analyzed using a constant comparative technique, described using a published framework of PCC, and compared to identify similarities between groups.

Results: Forty-six clinicians from 6 provinces were interviewed. Challenges included misperception of risk among patients, need for multiple consultations to achieve understanding, and lack of patient information or supportive services. Recommendations included educational aids for patients, and patient navigators. During focus groups, 35 patients from 5 provinces reported variable understanding of the distinction between DCIS and invasive cancer. Involvement in treatment decision-making varied between sites; decisions were largely based on clinician recommendations, and patients felt uninformed about treatment risks and outcomes. Patients desired greater psychological support, information about self-management, and longer-term follow-up.

Conclusions: The findings, detailed by a PCC framework, can be used by clinicians and health care managers to improve PCC for DCIS, and by researchers to evaluate PCC interventions for DCIS.

Keywords: ductal carcinoma in situ; person-centred care; qualitative methods; decision-making; health services

Themes: Person-Centred Care; Health System Improvements & Innovations; Health Services Delivery

P58

MANAGING THE PERFORMANCE OF CANCER AND RENAL SERVICES IN ONTARIO: STAKEHOLDER PERSPECTIVES AND A RESEARCH AGENDA

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Purpose: There is an increasing push to not just measure health system performance, but also to actively 'manage' it by providing feedback, establishing accountability, and applying incentives. The aim of this study was to assess performance management (PM) of cancer and renal services in Ontario and prioritize research directions.

Methods: We conducted semi-structured interviews and focus groups with internal, regional, and external stakeholders to identify strengths and weaknesses of CCO's PM system, and to assess and rank five research directions identified via a literature review. We thematically analyzed the transcripts, and for the rankings we calculated the mean, mode, frequency ranked 1st or 2nd, and frequency ranked 5th.

Results: A total of 156 individuals participated in the study, including administrative, clinical, and policy stakeholders, as well as patients. Key strengths included province-wide data management and reporting, clinician engagement, and a collaborative tone. The key weakness was the 'opportunity cost' associated with data collection and reporting, and the number and scale of improvement initiatives. Cross-cutting themes included: (a) PM as a dynamic socio-technical process, (b) the influence of multi-level contextual factors, and (c) a tension between PM for accountability versus improvement. Stakeholder groups prioritized different research directions based on their experiences and decision-making needs. However, they all ranked highly the need to better understand if/how the PM tools and processes motivate improvement among leaders and staff in regional programs.

Conclusions: Stakeholders agreed that CCO has a robust PM system that has positively impacted care delivery, but that further refinement is required.

Keywords: performance management; accountability; performance improvement; health systems; qualitative

Themes: Health System Improvements & Innovations; Health Services Delivery

P59

CANCER SURVIVAL OUTCOMES IN ONTARIO: SIGNIFICANT UNEXPLAINED VARIATIONS

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Purpose: Cancer-specific outcomes are critical for assessing quality of care. We sought to describe: 5-year cancer-specific survival (5Y-CSS) rates among Ontario LHINs; the impact of adjusting for known patient factors; and 5Y-CSS rates among patients diagnosed at Ontario's 50 largest cancer diagnosing hospitals.

Methods: Newly diagnosed cases (colorectal, lung, breast, or prostate cancer) were identified in the Ontario Cancer Registry. Records were linked to data from CIHI and Statistics Canada, thereby identifying date of diagnosis, cause-specific vital status, diagnosing hospital, and other reported variables. Cox regression models were used, and all models were adjusted for age and sex.

Results: N=498,382 incident cases (2007-2013) were included. 5Y-CSS varied across LHINs for all patients combined (range 62%-72%; $p<0.0001$). Considering colorectal cancer cases as illustrative (N=57,927), 5Y-CSS varied among LHINs from 58.4%-66.4% ($p<0.0001$). Further adjusting for socioeconomic and urban-rural status minimally reduced that variation. Limiting the analysis cohort to patients diagnosed in one of Ontario's 50 largest hospitals (N=43,245), 5Y-CSS ranged from 52% to 72% ($p<0.0001$) among hospitals, and from 55%-63% ($p<0.0001$) among the hospitals affiliated with regional cancer centres. Collaborative staging data were available for a subset of patients; 5Y-CSS within all stage III patients (N=5,360) ranged from 72%-87%. Comparable findings were seen for patients diagnosed with lung, breast, or prostate cancer.

Conclusions: Important, highly significant differences in survival outcomes exist across Ontario. These are of great interest to patients, health-care providers, system administrators, and policy makers, and are not explained by adjusting for the variables included in these analyses.

Keywords: cancer survival; regional variation; quality of care outcomes

Themes: Health System Improvements & Innovations; Health Services Delivery

P60 – ELEVATOR PITCH

MANAGING TREATMENT-RELATED TOXICITIES IN THE COMMUNITY SETTING: A SURVEY OF PHARMACISTS IN ONTARIO

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Purpose: Toxicity management is a challenge with cancer treatment, including oral anticancer drugs (OACD). A review of claims data showed that a majority of publicly-funded OACD were filled in the community where pharmacists may not possess the specialized knowledge, skills and experience required to provide effective patient care. A survey of community pharmacists in Ontario was conducted to identify the behaviours and preferences of community pharmacists specific to the management of treatment-related toxicities in order to standardize cancer care in this area.

Methods: An electronic questionnaire was distributed to approximately 5000 community pharmacists. The 21-question survey gathered information on the demographic profile of the pharmacists, basic geographic and socioeconomic variables associated with their practice setting, current toxicity management practices, education and training needs, and preferences for communicating with other providers.

Results: Of 349 pharmacists who responded, almost all (96%) were interested in managing chemotherapy-related toxicities as part of their work but the majority (84%) did not feel that their current level of pharmacy training has provided them with an oncology education sufficient for the demands of their practice. Fifty-six percent of respondents indicated that they have reached out to a health care provider at a cancer centre and of those, 52% reported that their questions were resolved within 48 hours but 60% would have preferred to receive a response within 12 hours.

Conclusions: The results of this study support the need to provide community pharmacists with oncology-specific training and timely access to providers at prescribing institutions in order to manage toxicities.

Keywords: toxicity management; community pharmacists; survey

Themes: Health Services Delivery

P61

CORRESPONDENCE REACH BARRIERS ANALYSES FOR OCSP

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Purpose: As an organized cancer screening program OCSP is using mail invitations to screening. Missing or incorrect address information prevent many eligible women from getting screening services. The purpose of the study was to identify potential locations and characteristics of screen eligible women in Ontario missed by mail correspondence due to incorrect or missing contact information. The study also aimed at leveraging insights from the analyses and providing recommended strategies and interventions for better recruitment in the areas with higher prevalence of renters and movers.

Methods: Combined analyses of health administrative, geo-spatial and market intelligence data were conducted and relevant maps and recruitment related recommendations were developed. SAS, Alteryx and Arc-GIS software were used for the analyses.

Results: Demographic and other recruitment related characteristics, as well as maps for potential location of women with higher risk of being missed by mail correspondence were developed. About 70% of the population in target areas live in households with less than 60K annual income. They can be described as having mixed education level. More than half of them reported Internet as a primary source for health information with 80% reporting owning a smart phone.

Conclusions: Based on the analyses we recommend increasing the utilization of the identified high risk areas in social media campaigns and using social media platforms preferred by the target population: LinkedIn, Flickr and Tumblr. We also recommend using tailored messaging based on identified characteristics of the target population.

Keywords: barriers; screening; participation; target

Themes: Person-Centred Care; Prevention of Chronic Disease; Population Health; Health Services Delivery

P62

IDENTIFYING POTENTIALLY PREVENTABLE EMERGENCY DEPARTMENT (PPED) VISITS IN CANADIAN CANCER PATIENTS

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Purpose: Cancer patients often visit the ED for treatment-related symptoms. Identification of PPED may enable timely access to appropriate care like targeted symptom management, potentially reducing ED utilization. However, there is a lack of system-level PPED definitions in Canada. Our objective was to develop a working PPED typology in the Canadian context, based on US typologies.

Methods: Canadian Emergency Department Information System (CEDIS) complaints were mapped against the PPED metric proposed by Panattoni et al, which combines the Centres for Medicare and Medicaid Services typology with the STAR PRO tool. The CEDIS-based algorithm was then applied to ED visits experienced by cancer patients who received chemotherapy and/or radiotherapy between April 1, 2014 and March 31, 2015 in Ontario. ED visits were categorized as ED-only (discharged from ED) or EDH (ED visit leading to hospitalization)

Results: There were 43,227 ED visits (67% ED-only and 33% EDH) among 64,407 patients. The most common presenting CEDIS complaints were pain (20%), fever (13%) and shortness-of-breath (7%) among chemotherapy patients, and pain (19%), shortness-of-breath (11%) and general weakness (9%) among radiation patients. By applying the CEDIS-based PPED definition, which included 17 presenting complaints, 53% of ED-only and 67% of EDH visits were considered PPED.

Conclusions: Typologies of PPED from other jurisdictions are transferable to the Canadian context. Our CEDIS-based exploratory PPED typology can be used to support the planning and management of proactive symptom care and ED utilization. Future studies should validate this tool against charts and in other Canadian cohorts.

Keywords: ED utilization; preventable admissions; toxicity management; sustainable models of care; access to care

Themes: Person-Centred Care; Value for Money; Integrated Care; Health System Improvements & Innovations; Health Services Delivery

P63 – ELEVATOR PITCH

ONTARIO RENAL NETWORK (ORN) PERSON-CENTRED DECISION-MAKING: IMPLEMENTING GOALS OF CARE CONVERSATIONS

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Purpose: In its Ontario Renal Plan II, palliative care was identified as a priority for people living with advanced chronic kidney disease. A province-wide intervention is being implemented to ensure that by 2019, all chronic dialysis patients will have their Goals of Care (GOC) assessed annually to inform their treatment decisions (TD).

Methods: An approach to the provincial collection of GOC data was developed, including information on a patient's Substitute Decision Maker, illness understanding, code status, and if goals and values have been incorporated into a documented Plan of Treatment. A data submission tool was developed to capture patient GOC and TD via regular submissions from Regional Renal Programs. Over 500 multidisciplinary healthcare providers were trained on GOC and TD conversations. Provider and patient education resources on GOC and their role in developing a Plan of Treatment were also developed.

Results: Of chronic dialysis registrants from April-June 2017 in Ontario, 33% had GOC documented within 90 days of chronic dialysis registration, which is in line with expectations. 64% of patients had incomplete data submitted, with only 3% of records missing. Collection of GOC data throughout the province will continue quarterly.

Conclusions: This is the first time GOC data is being collected; a baseline is being established from which to measure progress. Many programs incorporate GOC conversations into patient care, however a consistent and province-wide process is new. Additional data over coming months will improve accuracy of the indicator and allow data correlations to be meaningfully explored.

Keywords: person-centred decision-making; goals of care; palliative care

Themes: Integrated Care; Health Services Delivery

P64

COMPARISON OF WAIT TIMES ACROSS THE BREAST CANCER TREATMENT PATHWAY AMONG WOMEN UNDERGOING ORGANIZED ASSESSMENT VERSUS USUAL CARE

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Purpose: Shorter wait times from abnormal screen to treatment reduces negative impacts on prognosis. The Ontario Breast Screening Program (OBSP) offers organized assessment through Breast Assessment Centres (BAC) that coordinate follow-up tests after an abnormal mammogram through a defined multidisciplinary-care pathway. This study compared median wait times (in days) across the breast cancer treatment pathway among screened women diagnosed through a BAC versus usual care (UC).

Methods: A retrospective cohort design identified women diagnosed with screen-detected invasive breast cancer at a BAC and UC from 2002-2010. Demographic characteristics were obtained from routine data collected by the OBSP. Chart abstraction provided breast cancer prognostic and treatment data. Wait times examined included from abnormal screen to definitive surgery, from final surgery to chemotherapy or radiotherapy (without chemotherapy) and from final chemotherapy to radiotherapy. Overall wait times were dichotomized as greater or less than the median and used in adjusted logistic regression comparing wait times by BAC versus UC.

Results: There were 3,854 women diagnosed with breast cancer in the study (BAC=2,010; UC=1,844). In adjusted analyses, diagnosis through BAC was associated with shorter wait times from abnormal screen to definitive surgery (OR=0.62, 95%CI: 0.53-0.72), final surgery to radiotherapy (OR=0.76, 95%CI: 0.62-0.92) and final chemotherapy to radiotherapy (OR=0.74, 95%CI: 0.56-0.98).

Conclusions: In Ontario, women undergoing organized breast assessment experienced shorter wait times from abnormal screen to definitive surgery, surgery to radiotherapy and chemotherapy to radiotherapy. Factors influencing wait times along the breast cancer treatment pathway are essential for quality improvement of patient outcomes.

Keywords: breast assessment; treatment wait time; surgery; chemotherapy; radiotherapy

Themes: Person-Centred Care; Integrated Care; Health System Improvements & Innovations; Population Health; Health Services Delivery

P65

ASSESSING THE DELIVERY OF INTEGRATED CARE TO PATIENTS WITH CHRONIC KIDNEY DISEASE IN ONTARIO: PATIENT AND PROVIDER PERSPECTIVES

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Purpose: Patients with Chronic Kidney Disease (CKD) have complex health needs, and thus require care that is integrated across professionals and organizations. The extent to which patients with CKD in Ontario receive integrated care is unclear. This study assessed integrated care delivery across Ontario from provider and patient perspectives.

Methods: A five-item survey for providers was developed and administered via the web by the Ontario Renal Network (ORN) to 596 purposefully selected providers, including nephrologists, nurses and social workers. Four items from the Patient Assessment of Chronic Illness Care (PACIC-26) survey were used to capture the patient perspective. The patient survey was administered to a random sample of 14,257 patients with CKD.

Results: A total of 314 providers and 2,447 patients responded to the surveys. Key findings include that 36% of providers reported their patients' care was well-coordinated across settings; 51% of providers reported they are aware of appropriate home and community services to support their patients; 20% of patients reported they were encouraged to attend programs in the community; and 38% of patients were asked how their visits with other doctors were going (% reporting 'always' or 'most of the time').

Conclusions: The survey results suggest that patients with CKD in Ontario are not consistently receiving integrated care. Key areas for future improvement include linkages to community-based services and patient-provider communication. Standardized measurement of integrated care delivery over time, using surveys such as these, can support local quality improvement and broader system transformation.

Keywords: renal care; integrated care; measurement

Themes: Integrated Care; Health System Improvements & Innovations;
Health Services Delivery

P66 – EQUITY POSTER WALK

DEVELOPING THE EQUITABLE ENGAGEMENT FRAMEWORK: REFLECTING THE DIVERSITY OF ONTARIANS IN PATIENT, FAMILY AND PUBLIC ENGAGEMENT PRACTICES AT CCO

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Purpose: There is growing evidence to suggest that CCO's approach to patient engagement only brings a limited subset of Ontarians to the table. To ameliorate this, a framework for engaging Ontarians more equitably has been developed by the Patient Experience & Engagement program.

Method: The framework for equitable engagement was created through: the completion of an environmental scan, the development, deployment and analysis of an 18-item Advisor Health Equity (AHE) Survey, and consultation with community-based organizations.

Results: The environmental scan highlighted population specific barriers preventing equitable engagement, the need to employ a mixed strategy dependent on the preferences of different communities and the value of partnering with community level organizations. The AHE survey was administered to CCO's PFA Community (n=51) and signaled a lack of representation amongst new Canadians, members of the LGBTQ community and youth transitioning into the adult system. Following consultation with community-based partners representative of these three groups, a formal framework was developed detailing engagement principles, organizational capacity building, community partnerships and specific tactical steps.

Conclusions: Working with a diverse group of Advisors at CCO, who each have unique backgrounds and different experiences with the Ontario healthcare system will ensure that the voices and perspectives from a representative sample of Ontario's population are captured. Use of the developed engagement framework fosters understanding of the full public, patient and family experience in Ontario and also identified areas for improvement and future work.

Keywords: patient engagement; equity

Themes: Person-Centred Care; Population Health; Health Services Delivery

P67 – ELEVATOR PITCH

AN EVALUATION OF CLINICIAN ENGAGEMENT AT CCO: SURVEYING CLINICIANS CURRENTLY ENGAGED WITH CCO IN A PROVINCIAL, REGIONAL AND/OR VOLUNTEER ROLE

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Purpose: This study aimed to evaluate clinician engagement at CCO from the perspective of clinicians currently engaged in a formal capacity. Through this work, CCO can identify improvement opportunities to enhance the synergistic relationship with clinicians.

Methods: An online survey based on the CCO Clinician Engagement Framework was distributed to clinicians engaged with CCO. Clinicians received the survey link via email from their associated CCO program. The participants remained anonymous and completed the survey from June 20-July 20, 2017. The analysis included descriptive statistics and a review of the open text comments.

Results: A total of 537 clinicians responded to the survey across multiple disciplines (62% physician specialists, 8% nurses, 6% family physicians, 24% other clinicians). 82% agreed that CCO is committed to clinician engagement, 85% were satisfied with their experience with CCO, 93% agreed that CCO embraces evidence-based practices, and 90% agreed that CCO adds value to the healthcare system. In their CCO role(s), over 80% felt they were improving patient care and the health system in Ontario. Of regional leads, case reviewers and volunteers, 60% agreed that their role is clear to colleagues in their clinical settings.

Conclusions: This survey uncovered areas where CCO staff and clinicians can improve for an enhanced engagement environment to benefit quality of care and patient outcomes. The survey results have directed CCO Clinician Engagement priorities for 2018/19: further standardize key documents and processes, collaboration by staff members across CCO, and explore engaging more clinicians.

Keywords: clinician engagement; evaluation; survey; framework

Themes: Health System Improvements & Innovations; Best Evidence

P68

IMPLEMENTATION AND EVALUATION OF A COMMUNICATIONS AND KNOWLEDGE TRANSLATION AND EXCHANGE STRATEGY FOR SMOKING CESSATION IN ONTARIO'S REGIONAL CANCER PROGRAMS

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Purpose: To support efforts to refine the smoking cessation program in Ontario's 14 Regional Cancer Programs (RCPs), Cancer Care Ontario implemented a Communications and Knowledge Translation and Exchange (CKTE) strategy. The main objectives of the strategy were to increase knowledge among healthcare providers and cancer patients on the benefits of smoking cessation, to increase support for the refined 3As (Ask, Advise, Act) model, and to promote a culture shift where smoking cessation is recognized as a key component of quality cancer care.

Methods: The CKTE strategy focused on three channels to deliver key messages: Knowledge products (educational materials, videos); events (webinars, grand rounds); and networks (social media, webpage). The primary target audiences were healthcare providers and cancer patients. The strategy was evaluated using the RE-AIM (Reach, Effectiveness, Adoption, Implementation and Maintenance) framework.

Results: Over 15,000 educational materials and 3 videos were distributed. Grand rounds and webinars were held with over 150 individuals and multiple organizations. A dedicated smoking cessation webpage was launched. A social media campaign, launched on World No Tobacco Day, saw engagement rates exceed benchmarks. Evaluation results showed increases in healthcare providers' knowledge and intentions to change practice including sharing knowledge with patients.

Conclusions: The CKTE strategy has contributed to shifting the culture in Ontario's cancer system to one that values smoking cessation. Communication with both healthcare providers and patients is vital to gain support for smoking cessation and adopt the 3As model in the oncology setting, and remains integral to the program's continued success.

Keywords: smoking cessation; communications; knowledge translation

Themes: Person-Centred Care; Prevention of Chronic Disease; Health System Improvements & Innovations; Population Health; Best Evidence

P69

IMPLEMENTATION OF AN E-REFERRAL SMOKING CESSATION TOOL FOLLOWING CT SCREENING FOR EARLY DETECTION OF LUNG CANCER

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Purpose: For high-risk smokers undergoing lung cancer screening, a valuable teachable moment is clearly evident. Although data on smoking is routinely collected, no formal cessation interventions are in place. At Princess Margaret Cancer Center (PM) clinics, the introduction of the smoking Cessation Ereferral SystEm (CEASE) has increased referral rates to support programs. Consequently, CEASE was recently added to PM lung screening protocol. This study evaluated the feasibility and efficacy of CEASE in a standard lung screening setting.

Methods: Pre-/post-CEASE intervention assessment was guided by the CIHR Knowledge-to-Action (KTA) framework. Feasibility was assessed through interviews with the clinic coordinator and on-site surveillance. A follow-up telephone survey requesting self-reports of smoking and e-referral use was conducted with pre-/post-implementation cohorts at least three months after screening.

Results: CEASE implementation identified facilitation factors such as subject acceptability and minimal clinic flow disruption; barriers included unfamiliarity with technology. Of 75 subjects analyzed, 50 (67%) were part of the pre-CEASE cohort, and 25 (33%) comprised the post-CEASE cohort. Mean age was 72 (range: 57-85), 93% were Caucasian, 52% were male; mean pack-years was 52. Thirty-two percent of participants after CEASE implementation accepted a referral. There was no significant association between participants being offered CEASE and changes in smoking behaviour ($p=0.84$), though sample size was small and follow-up time was short. Physical accessibility and difficulty reaching subjects were identified as barriers to counselling programs.

Conclusions: While CEASE has been successfully implemented into lung screening practice, preliminary results showcase current barriers impeding potential smoking cessation effectiveness.

Keywords: smoking cessation; health promotion; health technology

Themes: Person-Centred Care; Person-Centred Care; Health System Improvements & Innovations; Population Health; Best Evidence

P70

DRIVING EVIDENCE-INFORMED PRACTICE IN SYSTEMIC TREATMENT THROUGH THE SYSTEMIC TREATMENT QUALITY-BASED PROGRAM: AN UPDATE

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Purpose: In 2014 the Ontario Systemic Treatment Quality-Based Program (ST-QBP), implemented patient-based funding for evidence-informed (EI) episodes of care. Disease Site Groups (DSGs) reviewed and recommended treatment regimens for inclusion in the model based on clinical benefit as determined through expert opinion. To standardize the review process, an Evidence-informed Working Group (EI-WG) consisting of clinical experts was established to provide recommendations.

Methods: Between 2015 and 2017, the EI-WG created documents to define evidence-informed practice, guide drug substitutions, and a checklist to support regimen review. These documents were socialized with key stakeholders including DSGs, the Ministry of Health and Long-Term Care, and internal clinical committees to obtain feedback/endorsement prior to dissemination to Ontario hospitals.

Results: The documents created by the EI-WG provide criteria for benefit and evidence of ST-QBP regimens, a framework for assessment, and tools to increase clinical/administrative efficiency. The ST-QBP has seen greater adherence to EI regimens:

Fiscal Year 2013/14 - 90% in adjuvant/curative treatment; 89% in palliative treatment;

Year to Date 2017/18 - 99% in adjuvant/curative treatment; 99% in palliative treatment.

Increased adherence to EI regimens resulted from the ST-QBP only funding EI regimens (quality-based funding) and has been supported through mechanisms such as the tools developed by the EI-WG.

Conclusions: By standardizing the definition and assessment of EI treatment, the ST-QBP systematically reviews new regimens for inclusion in the model based on clinical benefit while balancing health system pressures. Work is underway to review existing ST-QBP regimens and possibly de-list them based on newer evidence, toxicity, clinical practice, and/or utilization.

Keywords: evidence-informed; quality-based; funding; systemic; regimens

Themes: Person-Centred Care; Value for Money; Health System Improvements & Innovations; Population Health; Health Services Delivery; Best Evidence

P71

THE EFFECTIVENESS OF USING CO-DESIGN METHODS TO INCREASE FAMILY PHYSICIANS ACCESS OF AN AUDIT-AND-FEEDBACK TOOL: A FRACTIONAL FACTORIAL TRIAL DESIGN

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Purpose: The Screening Activity Report (SAR) allows family physicians (FPs) to identify patients overdue for cancer screening. CCO already sends monthly emails to FPs but these do not seem to prompt SAR-use. We sought to identify and test communication strategies that would lead to increased SAR-use.

Methods: We used co-creation methodology with 20 PCPs to develop persuasive content for existing monthly email reminders sent to PCPs about the SAR. We identified three promising behaviour techniques to include in the email: anticipated regret (if an avoidable poor outcome occurs); material incentive (bonuses that can be achieved with greater screening rates); and problem solving (ideas to fit SAR-use within existing workflows). We tested variations of the reminder email featuring these techniques in a 2x2x2 factorial trial. FPs (N=5,576) were randomly allocated to one of eight experimental conditions for four months (May-Aug 2017). Interviews with FPs explored underlying reasons for effects observed.

Results: 21.1% of FPs accessed the SAR in total: 22.3% for anticipated regret; 20.9% for material incentive; and 20.2% for problem solving (p=0.05). Total SAR-use by group was 1,612, 1,416, and 1,434 respectively (p<0.01). We observed no difference in patients overdue for cancer screening tests. Interviews identified opportunities to further support cancer screening in primary care.

Conclusions: Co-creation methods led to novel techniques for physician engagement which may lead to increased SAR-use. Rigorous evaluation of the communication strategies demonstrated commitment to evidence-based policy making and generated new ideas about ways to encourage cancer screening activities in primary care.

Keywords: cancer screening; primary care; behaviour change techniques; audit and feedback

Themes: Health System Improvements & Innovations; Best Evidence

P72

INTEGRATING EQ5D-5L INTO ONCOLOGY PRACTICE

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Purpose: To implement EuroQol-5D-5L (EQ5D) in 2 outpatient clinics, St. Michael's Hospital's general breast cancer clinics (GBR) and Princess Margaret Hospital's multidisciplinary brain metastases clinic (MBM), using a formal validated approach, formally collecting implementation data and altering strategies as needed.

Methods: We used the Canadian Institutes of Health Research's Knowledge-to-Action (KTA) framework as a guide to assess implementation of EQ5D-5L in two outpatient cancer populations; GBR and MBM were chosen to represent two very different organizational structures and patient populations. KTA steps from landscape assessment and engagement of stakeholders through to pilot implementation using paper surveys are reported.

Results: After assessing 285 patients (GBR=136; MBM=149) across 57 days, implementation issues at the two sites were noted. GBR clinic's larger and more general patient base was associated with a lower average socioeconomic status than MBM clinic, which targets a specialized patient population. More barriers to implementation at GBR were systemic and organizational in nature, whereas barriers at MBM were associated with patient management, where patients' functional disabilities or neglect to return completed questionnaires hindered data collection. For both sites, successful EQ5D-5L implementation was contingent on senior management support and engagement of multiple stakeholders throughout the implementation process, leading to site-specific suggestions.

Conclusions: Differing implementation strategies at both sites is reflective of target sites' distinctive systemic and organizational characteristics and findings can be used to inform the translation of EQ5D-5L to other sites. We present recommendations to aid scalability and implementation efforts, including future transition to electronic routine assessments.

Keywords: EQ5D; quality of life; health utility scores; cancer patients; implementation

Themes: Person-Centred Care; Value for Money; Health System Improvements & Innovations; Value Determination; Best Evidence

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PERSONALIZING THE AGE TO STOP COLORECTAL CANCER SCREENING IN CANADA BASED ON COMORBIDITY AND PRIOR SCREENING HISTORY: MODEL ESTIMATES OF HARMS AND BENEFITS

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Purpose: Colorectal cancer (CRC) screening cessation is recommended after age 74; however, sub-populations of older persons may still benefit. To determine the ages to stop CRC screening (i.e., stop age) with fecal immunochemical testing (FIT) based on sex, comorbidity and screening history.

Methods: We used the Microsimulation Screening Analysis-Colon model to simulate cohorts of Canadian males and females, aged 66 to 90 years, which varied by comorbidity and screening history. We assumed biennial screening with FIT in an organized CRC screening program. To determine the stop ages for CRC screening, we estimated the harms and benefits of undergoing CRC screening in each cohort compared to an average healthy Canadian population with a perfect screening history who underwent one more screening event at age 74.

Results: Previously unscreened men and women with no comorbidity can be screened until 88 years of age. As comorbidity increased, the age to stop screening decreased for both males and females. For those with no or low comorbidity, as prior screening compliance improved, the age to stop screening decreased (e.g., no comorbidity and perfect prior screening, screening should stop at age 76). Participants with severe comorbidity had the lowest age to stop screening (age ≤66) which did not vary by prior screening history.

Conclusions: Stop ages for CRC screening using biennial FIT can be personalized based on comorbidity and screening history; sex has a limited impact on stop ages. These findings can be used for screening-related decision-making and to inform the design of organized screening programs.

Keywords: CRC screening; FIT; Microsimulation Screening Analysis; colon model

Themes: Prevention of Chronic Disease; Health System Improvements & Innovations; Population Health; Best Evidence

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FIREFIGHTING, POLICE WORK, AND PROSTATE CANCER RISK: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Purpose: A systematic review and meta-analysis were conducted to evaluate potential associations between firefighting and police occupations, and prostate cancer incidence and mortality.

Methods: Original epidemiological studies published from 1980-2017 were identified through PubMed and Web of Science. Studies were included if they contained specific job titles for ever/never firefighting and police work and associated prostate cancer risk estimates with 95% confidence intervals (CI). Study quality was assessed using a 20-point checklist. Prostate cancer meta-risk estimates (mRE) and corresponding 95% CIs were calculated for firefighting and police work separately and by various study characteristics using random effects models. Between-study heterogeneity was evaluated using the I² score and publication bias was assessed using Begg's and Egger's tests.

Results: A total of 26 firefighter and 12 police studies were included in the meta-analysis, with quality assessment scores ranging from 7-19 points. For firefighter studies, the prostate cancer incidence mRE was 1.17 (95% CI=1.08-1.29, I²=72%) and the mortality mRE was 1.12 (95% CI=0.92-1.36, I²=50%). The mRE for police incidence studies was 1.15 (95% CI=1.02-1.31; I²=43%); for mortality studies, the mRE was 1.08 (95% CI=0.80-1.45; I²=0%). By study design, mREs for both firefighter and police studies were similar to incidence and mortality estimates.

Conclusions: Small excess risks of prostate cancer were observed from firefighter studies with moderate to substantial heterogeneity and a relatively small number of police studies, respectively. There is a need for further studies to examine police occupations and to assess unique and shared exposures in firefighting and police work.

Keywords: firefighters; police; occupation; prostate cancer risk; meta-analysis

Themes: Prevention of Chronic Disease; Population Health; Best Evidence

P75

EVIDENCE-BASED INTERVENTIONS FOR COMMUNITY-DWELLING PERSONS LIVING WITH DEMENTIA

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Purpose: Identifying promising interventions for improving outcomes for persons living with dementia (PLwD), care partners and the health system is an important first step in capacity planning. A scoping review was undertaken to generate potential candidates for scenario modelling.

Methods: We investigated interventions across eleven domains for primary outcomes: time and rate of LTC transition, hospitalization, economic evaluation, and quality of life and patient-centred measures. Scholarly articles were identified using electronic databases (e.g. MEDLINE and PsycINFO) and expert consultation. Two reviewers independently screened results and abstracted data; a third adjudicated final inclusion. GRADE and Oxford Levels of Evidence were applied to assess evidence and evaluate recommendations for use.

Results: We screened 468 titles and abstracts and 152 full-text. Sixty-one studies published between 1985 and 2016, including meta-analyses, systematic reviews, randomized clinical trials and cohort studies were synthesized. Effective interventions achieved between 4.5 to 10 months of delayed time to admission to LTC and approximately 20-40% reduced rate of transition. Interventions conferred modest positive benefits mostly related to mental health and quality of life of PLwD and care partners, whereas economic benefits and impact on hospitalization or emergency room department use were often mixed.

Conclusions: Our review identified that, only four interventions: adult day programs; care partner education programs; comprehensive community-based care; and, dementia case reported sufficient evidence to consider including in scenario modelling for dementia capacity planning. These results were used to guide the broader dementia capacity planning process as part of the dementia strategy.

Keywords: scoping review; dementia; models of care; community care; health services

Themes: Health System Improvements & Innovations; Health Services Delivery; Best Evidence

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DRIVING QUALITY WITH THE COLPOSCOPY COMMUNITY OF PRACTICE

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Purpose: The Ontario Cervical Screening Program (OCSP) established a provincial Colposcopy Community of Practice (CoP) to create a forum where none previously existed for colposcopy providers to communicate and share knowledge. The goal of this CoP is to facilitate the organization of Ontario colposcopy services, identify and address gaps and changes in practice, and receive feedback from practitioners as we integrate colposcopy and cervical screening as a continuum.

Methods: Online province-wide meetings address best practices for colposcopy, the evidence that informs these best practices, and strategies to implement change. Clinical cases to illustrate specific principles are presented. The CoP is led by OCSP's clinical, scientific and regional leads. Following each CoP meeting, feedback is invited through a centralized survey.

Results: More than half of the practicing colposcopy providers in the province are now members of the CoP. Responses to the CoP survey confirm that the CoP has helped members navigate OCSP's clinical guidance document, understand the recommendations, and align their practices. From CoP member feedback, the OCSP created a needs-based toolkit to help colposcopy providers align with recommended best practice pathways and improve integration between colposcopy care and screening in primary care.

Conclusions: The CoP is instrumental in enabling Ontario's colposcopists to share knowledge, insights and concerns regarding colposcopy care, and continues to shape and improve the colposcopy program in Ontario. OCSP plans to further develop the provincial Colposcopy CoP and establish colposcopy champions across the province, encourage further peer-to-peer interactions and feedback to the program, and report quality metrics to the colposcopy community.

Keywords: colposcopy; cervical screening; engagement; partnerships

Themes: Person-Centred Care; Integrated Care; Health Services Delivery; Best Evidence

P77

USING REAL WORLD PERTUZUMAB-TRASTUZUMAB TREATMENT DATA FOR METASTATIC BREAST CANCER TO EXAMINE CYCLING ALGORITHMS AND OVERALL SURVIVAL

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Purpose: The usage of Pertuzumab in combination with Trastuzumab and a taxane has been funded for HER2 positive unresectable locally recurrent or metastatic breast cancer since 11/2013 until disease progression/unmanageable toxicity. We have created an algorithm to define treatment cycles for these drugs and have examined the association between number of cycles and overall survival.

Methods: Patients who were treated under the Pertuzumab-Trastuzumab policy were identified in the Provincial Drug Reimbursement Program Database. Mortality was obtained by linking to Ontario Cancer Registry and Registered Persons Database. Cycles of treatments were created using the following criteria:

- 1) Treatments within 5 days: same cycle
- 2) Treatments after 17 days: new cycle

Overall survival was calculated from the first chemotherapy date. The total number of cycles were divided into four quartiles (Q1:<11 cycles, Q2:11-18 cycles, Q3:19-33 cycles, Q4:>34 cycles). The association between the four quartiles of cycles and overall survival was examined.

Results: A total of 1049 patients were enrolled and treated in the Pertuzumab-Trastuzumab policy with a mean age of 57. The mean number of cycles was 20.7. The median overall survival was 9.7, 23.0 and 37.4 months in 1st, 2nd, and 3rd quartiles. Patients in the 4th quartile has not reached median survival yet. Crude overall survival was improved as the number of treatment cycles increases.

Conclusions: Our cycling algorithm has helped us gain a better understanding of the treatment pathway for these patients. An association was found such that survival duration increased with increased number of Pertuzumab-Trastuzumab treatment cycles.

Keywords: cancer drugs; cycling; survival

Themes: Value for Money; Integrated Care; Health System Improvements & Innovations; Population Health; Health Services Delivery; Best Evidence

P78 – ELEVATOR PITCH

APPLICATION OF THE PATIENT-REPORTED OUTCOME MEASURE (PROM) SELECTION PROCESS IN HEAD AND NECK CANCER

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Purpose: A Patient Reported Outcome Measure (PROM) provides the patient perspective on the impact of health conditions. PROMs are becoming standard of cancer care in the Ontario. The selection of which PROMs to implement in routine clinical practice requires thoughtful consideration; therefore a rigorous PROM selection process was developed to guide these decisions. The objective is to apply the PROM selection process to identify a measure for head and neck (H&N) cancer, and determine whether the process resulted in a PROM that is accepted by experts.

Methods: A systematic review identified six potential PROMs for H&N cancer (EORTC-H&N, FACT-H&N, FHNSI-10, FHNSI-22, MDASI-H&N, and Vanderbilt-H&N). Evaluating the acceptability of each PROM was guided by the newly-developed selection process, which assesses symptom coverage, usability, and psychometric soundness. This information was then reviewed by a multi-disciplinary committee of experts in measurement methods, and by a group of H&N cancer clinical experts.

Results: All six measures received good psychometric property scores. The FACT-H&N, and FHNSI-10 scored weak in symptom coverage; the EORTC-H&N and the Vanderbilt-H&N scored weak in usability. The MDASI-H&N and the FHNSI-22 performed well in all categories. The methodological and clinical experts felt that the selection process was appropriately thorough, and that either of the final two candidate measures were acceptable. The ultimate decision will be heavily influenced by patient consultation.

Conclusions: The PROM selection process provided a standardized method, which successfully facilitated an expert consensus to select a H&N cancer PROM for future provincial implementation.

Themes: Person-Centred Care; Health Services Delivery; Best Evidence

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EVALUATION OF NEW PATIENT ELIGIBILITY CRITERIA FOR CHRONIC KIDNEY DISEASE MULTIDISCIPLINARY CLINICS IN ONTARIO

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Purpose: In FY2016/17, the Ontario Renal Network (ORN) implemented new eligibility criteria based on the Kidney Failure Risk Equation to target funding to those patients at highest risk of developing end-stage renal disease (ESRD) requiring dialysis and who were most likely to benefit from multidisciplinary care.

Methods: Quantitative evaluation measures for the first full year of implementation (FY2016/17) were compared to pre-implementation results using data from the ORN's Ontario Renal Reporting System and the Ministry of Health. Survey information collected from providers in Regional Renal Programs was used to report on qualitative areas of inquiry. Unintended consequences were measured retrospectively to identify patients who started dialysis but did not meet the new criteria (i.e., new criteria failed to identify patients at high risk of ESRD).

Results: In FY16/17, 22,138 patients were registered for multidisciplinary care, of which 67.6% met the new funding eligibility criteria (n=14,976). Of the patients who started dialysis in FY16/17 (n=1,336), 0.37% were ineligible under the new criteria (n=5). Preliminary results from the first year of implementation suggest no impact on patient outcomes.

Conclusions: As predicted, and suggested by preliminary data, many patients previously enrolled in multidisciplinary care were at low risk for progressing to ESRD. Targeting funding to those predicted to benefit most from multidisciplinary care allow for reinvestment in other important renal services. While there were no clear changes to patient outcomes in year 1, ongoing monitoring in future years will be important to confirm early impressions.

Keywords: end-stage renal disease; kidney failure risk equation; patient-based funding; pre-dialysis care

Themes: Value for Money; Best Evidence

P80

COUNTING OCCUPATIONAL CARCINOGENS: THE IMPORTANCE OF OCCUPATIONAL EXPOSURES IN CANCER PREVENTION

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Purpose: The International Agency for Research on Cancer (IARC) is the most important agency for determining causes of cancer, and helps drive prevention around the world. Known and suspected carcinogens are present in a wide range of occupations and industries, but there is a perception that there are few workplace carcinogens and occupational exposure is not an important cancer risk factor. To raise awareness, we examined the IARC evaluations to identify which known and suspected carcinogens should be considered occupational.

Methods: The complete list of IARC evaluations was downloaded. Epidemiologic evidence for Group 1 (definitely carcinogenic), Group 2A (probably carcinogenic), Group 2B (possibly carcinogenic), Group 3 (unclassifiable), and Group 4 (probably not carcinogenic) agents was reviewed. Agents were classified as occupational if occupational studies contributed evidence of carcinogenicity. Where there was a lack of human epidemiology data, exposure data and use patterns were reviewed.

Results: As of January 2018, 1003 agents have been classified by IARC, including 120 Group 1 and 81 Group 2A agents. Preliminary results show that 105 (52%) of IARC's Group 1 and 2A agents are occupational, and studies of cancer among workers have contributed to their classification. A further 37 (18%) occur in workplaces, although the exposure of concern may not be primarily occupational.

Conclusions: Two thirds of the agents classified as carcinogenic or probably carcinogenic by IARC pose a risk to workers. All occupational cancers are preventable, highlighting the importance of targeting prevention strategies at the workplace to reduce cancer burden.

Keywords: occupation; cancer; prevention; workplace carcinogen

Themes: Prevention of Chronic Disease; Population Health; Best Evidence

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CLINICAL DIAGNOSTIC ACCURACY OF RESPIRATORY FAILURE IN CRITICALLY ILL HEMATOPOIETIC STEM CELL TRANSPLANT PATIENTS

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Purpose: Acute respiratory failure (ARF) in hematopoietic stem cell transplant (HSCT) patients is common and identifying the underlying cause is challenging. We aimed to characterize the etiology of ARF in patients who died of pulmonary complications from HSCT, and compare the clinical diagnosis to the diagnosis based on autopsy.

Methods: We performed a retrospective chart review of all mechanically ventilated HSCT patients who died and underwent autopsy evaluation in our intensive care unit (ICU) between 2006-2016. We evaluated the autopsy diagnosis, and whether the clinical and pathologic diagnoses were concordant. We also evaluated if the diagnosis based on autopsy would have changed management.

Results: Thirteen patients underwent autopsy evaluation after dying in the ICU. Pneumonia was the presumed cause of ARF in 11/13 cases. The clinical and pathologic diagnoses were concordant in 7/13 (54%) of cases. In the 6 discordant cases (all clinically diagnosed as infection), autopsy revealed a non-infectious inflammatory cause (3 cases) and an alternative infectious organism (3 cases). Pathologic findings might have changed management in 6/13 cases (alternative antimicrobial coverage in 3 cases, de-escalation of therapy in 3 cases).

Conclusions: Accurate identification of etiology of respiratory failure following HSCT remains challenging. Our study demonstrates discordance is common between clinical and pathologic diagnoses in a subset of HSCT patients who died and underwent a post mortem. It is unclear whether potential changes in management would have altered outcome. The risks and benefits of obtaining tissue, to improve our diagnostic accuracy, requires further evaluation in this population.

Keywords: respiratory failure; stem-cell transplant

Themes: Person-Centred Care; Best Evidence

P82

EXPANDING PRAGMATIC CLINICAL TRIALS ACROSS ONTARIO - THE RETHINKING CLINICAL TRIALS (REaCT) PROGRAM

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Purpose: Clinical trials to compare standard-of-care interventions in cancer patients are rarely performed. The Rethinking Clinical Trials (REaCT) Program was created to address the barriers to performing more efficient pragmatic trials comparing standard-of-care interventions.

Methods: Since its conception in 2014 the REaCT trials methodology has attempted to design trials that integrate; questions of importance to patients and physicians, broad eligibility criteria, simply defined endpoints, an integrated consent model incorporating oral consent, and web-based randomization in the clinic.

Results: Since its initiation, over 1300 patients have been enrolled in 13 REaCT trials. The trials portfolio covers; adjuvant chemotherapy (TNBC), palliative care (Bone Targeted Agents), supportive care (Dexamethasone, G-CSF, TC), surgery (ADM), imaging (Ejection Fraction) and vascular devices (VA Her2-positive, VA Her2-negative). Participating centers include: Ottawa (12 trials, 1086 patients), Edmonton (2 trials, 99 patients), Kingston (4 trials, 86 patients), Kitchener-Waterloo (1 trial, 35 patients), London (1 trial, 28 patients) and Newmarket (1 trial, 2 patients). Both patient and physician acceptability of the oral consent process is high.

Conclusions: We have successfully demonstrated the feasibility of performing REaCT trials at multiple cancer centres. Funding from the 2017 Clinical Programs and Quality Initiatives grant has enabled us to open 2 more sites. By building and instituting a transformative model based on pragmatic randomized clinical trials we will be able to move knowledge into action and evidence into practice, thereby optimizing the delivery of cost effective cancer care in Ontario and across Canada.

Keywords: breast cancer; pragmatic trials; standard of care; clinical equipoise

Themes: Person-Centred Care; Value for Money; Health System Improvements & Innovations; Best Evidence

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SUPPORTING EQUITY OF CARE IN COLORECTAL CANCER DIAGNOSIS: COLORECTAL DIAGNOSTIC ASSESSMENT PROGRAM ENTRY AND TRANSFER OF CARE CRITERIA

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Purpose: Diagnostic Assessment Programs (DAPs) were implemented to improve the quality of care during the diagnostic phase of the cancer journey. In order to support quality and equity of care for colorectal DAP patients across Ontario, CCO used a modified-Delphi consensus building approach to develop standard colorectal DAP entry and transfer of care criteria.

Methods: A working group, with representation from regional partners, clinicians, patient and family advisors, and relevant CCO programs was established. A modified-Delphi approach was utilized to develop a set of standard entry and transfers of care criteria. Draft recommendations were disseminated to stakeholders across the province through a survey in order to obtain a broader provincial perspective. The results of the survey were reviewed by the working group in order to build further consensus on the criteria.

Results: A total of 81 participants responded to the provincial survey. It was considered that there is consensus on a criteria if $\geq 80\%$ of participants “Agree” or “Agree with some exception” to the criteria, which was achieved for each criteria. Based on this multi-step process, a finalized set of standardized criteria was established.

Conclusions: The stakeholder participation and consensus attained in developing the criteria was considered a success. A modified-Delphi approach can be used to develop provincial consensus and recommendations for care where evidence is limited. CCO will be employing a similar approach to developing standard entry and transfer of care criteria for additional disease sites in order to continue improving upon quality and equity of care.

Keywords: diagnostic assessment programs; colorectal cancer

Themes: Integrated Care; Health System Improvements & Innovations; Best Evidence

DESCRIPTION OF THE IMPLEMENTATION OF SYMPTOM SCREENING IN THE YEAR FOLLOWING DIAGNOSIS IN A UNIVERSAL HEALTHCARE SYSTEM: A RETROSPECTIVE COHORT STUDY

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5. Institute of Health Policy, Management and Evaluation, University of Toronto
6. Cancer Care Ontario
7. Division of General Surgery, Sunnybrook Health Sciences Centre
8. Department of Radiation Oncology, University of Toronto

Purpose: Cancer Care Ontario (CCO) systematically collects patient-reported outcomes to improve symptom management and coordination of oncology care. This study describes patterns in the uptake of symptom screening and assessment of intensity in Ontario to identify areas for program improvement.

Methods: We identified patients diagnosed with cancer in Ontario between 2007 and 2014. We measured the occurrence of ≥ 1 symptom screening recorded in the year following diagnosis. Screening frequency was described by year of diagnosis, cancer site, Local Health Integration Network (LHIN) of patient residence and registration at a regional cancer centre (RCC).

Results: 161,610 (38%) of 425,905 patients diagnosed with cancer had at least one symptom screening record in the year following diagnosis. We observed increasing uptake of symptom screening over time by LHINS and RCCs, ranging from 18% of RCC patients screened in 2007 to 74% in 2014. Differences between LHIN of patient residence ranged from 38% to 67% in 2014. Endocrine system (10%) and hematopoietic/lymphatic (31%) cancers had the least likelihood of ≥ 1 symptom screening, compared to breast cancer (61%). These results were higher when restricted to patients in RCCs, ranging from 44% in hematopoietic/lymphatic cancers to 67% in breast cancer.

Conclusions: CCO has successfully implemented a large-scale, routine, symptom screening tool to assess the intensity of symptom burden and improve symptom management. Targeting patients with specific cancers and those treated at non-RCC institutions is necessary to mitigate regional differences and broaden the equitable distribution of symptom screening across the province.

Keywords: symptom screening; Edmonton Symptom Assessment System; cancer

Themes: Person-Centred Care; Health System Improvements & Innovations; Population Health; Health Services Delivery

SYMPTOM BURDEN IN BREAST CANCER PATIENTS IN THE TWO YEARS FOLLOWING DIAGNOSIS

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4. *Cancer Care Ontario*
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6. *Institute of Health Policy, Management and Evaluation, University of Toronto*
7. *Department of Radiation Oncology, University of Toronto*
8. *Division of General Surgery, Sunnybrook Health Sciences Centre*

Purpose: Breast cancer and its treatment is associated with varying symptom burden throughout diagnosis, treatment and survivorship. In 2007, Cancer Care Ontario implemented a province-wide program to screen for symptoms among all cancer patients using the Edmonton Symptom Assessment Score (ESAS). The purpose of this study is to describe symptom burden over two years among women diagnosed with breast cancer.

Methods: This longitudinal study used linked administrative data from Ontario. The cohort consisted of all adult women diagnosed with stage I-III breast cancer and undergoing surgery between 2007 and 2015. Descriptive statistics were performed to describe the prevalence of symptoms ≥ 4 from time of diagnosis to two years following. Multivariable analysis was performed to identify predictors of high symptom scores.

Results: The cohort included 40,992 breast cancer patients with an ESAS score. Anxiety was the most prevalent symptom, followed by tiredness and pain. Many symptoms were highest during diagnosis, surgery and adjuvant treatment; however, pain persisted up to two years following diagnosis. Higher comorbidity, more advanced stage at diagnosis, younger age, urban residence, lower income, and treatment course were associated with severe symptom scores.

Conclusions: These findings identify particular time points and patient sub-groups at risk for elevated symptom scores and may benefit from personalized or targeted supportive care interventions.

Keywords: symptom screening; Edmonton Symptom Assessment System; breast cancer

Themes: Person-Centred Care; Population Health; Health Services Delivery

THE CURRENT STATE OF FIRST NATIONS, INUIT, AND MÉTIS PEOPLES WITH CHRONIC AND END-STAGE KIDNEY DISEASE IN ONTARIO

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3. *Humber River Hospital*

Purpose: In Canada, First Nations, Inuit, and Métis (FNIM) peoples are three to five times more likely to require treatment for End-Stage Renal Disease (ESRD). This treatment results in significant disruption to daily life, requiring frequent clinic visits and dialysis care three to five times a week. An analysis was completed to better understand the care received by FNIM people in Ontario and seek areas for improvement.

Methods: This study compared self-identified FNIM people with non-FNIM people on their patient characteristics, pre-dialysis care and patient outcomes. All data was collected via the Ontario Renal Reporting System (ORRS). The analysis compared access to preferred modality, attrition from dialysis, demographics (age, sex, BMI), and comorbidities for both populations. It was hypothesized that FNIM people would have poorer pre-dialysis care and patient outcomes as compared to non-FNIM people.

Results: FNIM people have a higher likelihood of withdrawing from their preferred dialysis modality and vascular access over time. Demographic analysis also indicated the FNIM population with CKD/ESRD was significantly younger, with 76.3% of the population under 64 compared to 45.3% of the non-FNIM population. They also experience a greater number of comorbidities than non-FNIM, particularly hypertension, diabetes, and peripheral vascular disease.

Conclusions: There is a significant need to improve the renal system to work better with FNIM communities to improve prevention, early management, and chronic disease care in a culturally safe manner. Developing a relationship with FNIM communities and individuals would support the understanding of the barriers contributing to lower quality of care, and may help address any equity gaps creating these barriers.

Keywords: indigenous; chronic kidney disease; dialysis; end stage renal disease

Themes: Prevention of Chronic Disease; Integrated Care; Population Health; Health Services Delivery

HEALTHY EATING IN FIRST NATIONS, INUIT AND MÉTIS IN ONTARIO: RECOMMENDATIONS FOR CHRONIC DISEASE PREVENTION

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2. *Dalla Lana School of Public Health, University of Toronto*

Purpose: Traditional foods play an important role in First Nations, Inuit and Métis households and in maintaining a healthy diet. Recently, barriers to accessing and affording country foods, a decrease in traditional food systems skills and knowledge, and concerns about environmental contaminants have made participation in traditional systems increasingly challenging. This study compares vegetable and fruit consumption and food insecurity in First Nations, Inuit and Métis populations to that of non-Aboriginal Ontarians.

Methods: We measured prevalence estimates using the First Nations Regional Health Survey Phase 2 (for First Nations on-reserve), Canadian Community Health Survey (for First Nations off-reserve, Métis and non-Aboriginal Ontarians) and the Aboriginal Peoples Survey (for Inuit).

Results: First Nations (on- and off-reserve) have higher rates of inadequate vegetable and fruit consumption than non-Aboriginal Ontarians. In First Nations (on- and off-reserve) and Métis adults, men ate vegetables and fruit significantly less often than women. First Nations and Métis have significantly higher rates of food insecurity, and Inuit have significantly lower rates of food security than non-Aboriginal Ontarians. Among First Nations adults, those living on-reserve were more likely to be living in households classified as moderately or severely food insecure than those living off-reserve.

Conclusions: Based on these findings, policies and programs should be prioritized to increase food security and healthy eating in First Nations, Inuit and Métis populations: develop an indigenous food and nutrition strategy, reduce barriers that prevent access to healthy foods, address environmental issues affecting Indigenous foods and develop traditional food and nutrition skills.

Keywords: healthy eating; First Nations; Inuit; Métis; cancer prevention

Themes: Prevention of Chronic Disease; Population Health

VALIDATION OF ALGORITHMS FOR IDENTIFICATION OF METASTATIC GASTRIC CANCER IN THE ABSENCE OF TNM STAGING DATA

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Purpose: Cancer health services research requires TNM stage information to make meaningful conclusions, but accurate TNM stage data are often unavailable and population-based collection is impractical and expensive. We therefore created and validated algorithms to identify metastatic gastric cancer using administrative healthcare data.

Methods: We identified a population-based cohort of gastric cancer patients diagnosed between 2005 and 2008 from the Ontario Cancer Registry. The reference standard for metastatic disease was established using the Collaborative Staging method from stage data obtained in a provincial chart review. Through linked administrative healthcare data from hospitalizations, emergency department visits, and physician fee records, algorithms to identify metastatic gastric cancer were created with varying peri-diagnosis periods. The sensitivity, specificity, and accuracy of algorithms were evaluated.

Results: In the study period, 2,366 gastric cancer patients were identified, 54% of whom had metastatic disease. Algorithm sensitivity ranged from 50-90%, specificity ranged from 28-93%, and accuracy ranged from 62-73%. Maximal sensitivity and specificity were obtained using the algorithm including the most conservative list of diagnosis codes from hospitalization and outpatient records in the six months before and after diagnosis.

Conclusions: TNM stage data is fundamental to the conduct of clinical cancer research and use of algorithms identifying metastatic disease can be used in the absence of accurate, routinely collected, population-level stage data. The properties of these algorithms may be generalizable to other low-incidence, highly fatal cancers and other healthcare systems with administrative healthcare data availability.

Keywords: gastric cancer; metastatic; algorithm validation

Themes: Health System Improvements & Innovations; Population Health

BETTER WISE: AN INNOVATIVE, EVIDENCE-BASED PROGRAM FOR CANCER AND CHRONIC DISEASE PREVENTION AND SCREENING

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Purpose: Family physicians often lack time, resources, and tools to address cancer and chronic disease prevention and screening (CCDPS). Building on the results of the BETTER (Building on Existing Tools to Improve Chronic Disease Prevention and Screening in Primary Care) trial, which demonstrated improved uptake of CCDPS in primary care settings compared to usual care (54% vs 21%, $p < 0.001$), the BETTER WISE approach integrates evidence-based preventive care for cancer with other chronic diseases and cancer surveillance. A health professional in the primary care setting is trained to take on the role of Prevention Practitioner (PP), who develops a tailored "Prevention Prescription" with patients.

Methods: A pragmatic cluster randomized control trial. Patients are randomized at the physician level to either intervention or wait-list control. Eligible patients are aged 40-65 years and include cancer survivors (breast, colorectal, prostate). A PP will use the BETTER WISE toolkit, which includes blended care pathways for cancer surveillance and CCDPS. The outcome measure is a composite index: the proportion of appropriate CCDPS maneuvers achieved by the patient at 12-month follow-up.

Results: It is expected that BETTER WISE patients randomized to the intervention will have improved 12-month CCDPS outcomes compared to wait-list control. Trial recruitment will begin in spring 2018. Participating practices and PPs have been identified and trained in Alberta, Ontario, and Newfoundland & Labrador.

Conclusions: The BETTER WISE approach will address the CCDPS needs of patients including cancer survivors. This approach provides a framework to develop practices' skills and resources for cancer surveillance and CCDPS.

Keywords: prevention; primary care; screening

Themes: Prevention of Chronic Disease; Integrated Care; Health System Improvements & Innovations; Population Health; Health Services Delivery

A NEW INITIATIVE TO MEASURE THE PROVINCIAL RATE OF PERITONEAL DIALYSIS RELATED PERITONITIS IN ONTARIO

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5. *University of Western Ontario*
6. *Humber River Hospital*

Purpose: Peritonitis is an important complication of peritoneal dialysis (PD), as it is the most common cause of PD technique failure. In April 2016, the Ontario Renal Network launched a provincial quality improvement (QI) initiative with the aim to shift from local monitoring of peritonitis rates to a province-wide standardized tracking system.

Methods: All 26 RRP in Ontario collected and reported data from May 2016 - June 2017 using a tracking tool incorporating indicator methodology developed by an expert panel. Reported peritonitis events formed the numerator for the rate calculation, while the denominator was derived from the Ontario Renal Reporting System database (ORRS) to calculate person-time on PD. The peritonitis rate is expressed as number of infections per year at risk, combining patient-time from all PD patients at each RRP.

Results: Over a period of 14 months, 626 Peritonitis cases were reported for 2701.5 annualized patients, defining a provincial average of 0.23 cases per annualized patient, or about 1 case per 51.8 months. Program-level peritonitis rates ranged from 0.08 - 0.50 per annualized patient. Quarterly reports were shared with the programs for data validation, comparison and monitoring purposes. The initiative allowed programs to benchmark themselves against their peers, and design local QI plans.

Conclusions: The risk of peritonitis is deemed to be low in Ontario. This initiative has produced a sustainable system of data collection for monitoring the risk of peritonitis, and is part of a larger strategy to ensure that all patients receiving dialysis therapy experience as few complications as possible.

Keywords: peritoneal dialysis; quality improvement; chronic kidney disease; peritonitis

Themes: Person-Centred Care; Prevention of Chronic Disease; Health Services Delivery

REGIONAL PRIMARY CARE PROVIDER REPORT (RPCPR): A TOOL FOR PERFORMANCE MONITORING AND QUALITY IMPROVEMENT

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Purpose: To demonstrate the utility of a provider-level reporting tool in generating evidence for informed performance monitoring and quality improvement activities on cancer screening.

Methods:

Target Audience:

Regional Primary Care Leads (RPCLs)

Analysis:

Descriptive statistics are used to summarize and describe cancer screening performance in primary care physicians, participation in Physician-Linked Correspondence (PLC), and eHealth Ontario ONE ID® utilization.

Format:

Microsoft Excel dashboard

Frequency and Dissemination:

The password-protected report is distributed quarterly by email

Results: Cancer Care Ontario has developed the RPCPR in consultation with the Provincial Primary Care & Cancer Network. The RPCPR provides RPCLs with the following information:

- Aggregated regional and provincial summary data on cancer screening across primary care physicians, participation in PLC and physician eHealth Ontario ONE ID® utilization
- Provider-level data on cancer screening and abnormal FOBT results potentially lost to follow-up for all Patient Enrollment Model (PEM) physicians in all 14 regions across Ontario.

RPCPR encourages the use of data to inform decisions and actions when working with individual PEM physicians and their teams. It also helps to identify PEM physicians who may be able to benefit from interventions designed to enhance screening performance. Finally, it allows monitoring of trends and performance improvements at regional, group and individual provider levels.

Conclusions: RPCPR is a tool that supports Regional Cancer Programs and RPCLs in working with PEM physicians to enhance cancer screening participation and appropriate follow-up for their patients. It also assists RPCLs in achieving targeted quality improvement, knowledge brokering and education efforts with providers in their regions.

Themes: Prevention of Chronic Disease; Cancer Screening; Population Health

DRIVING ONTARIO CERVICAL SCREENING PROGRAM (OCSP) QUALITY IMPROVEMENT THROUGH THE *ANALYTICS INSIDER*

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2. *Sunnybrook Health Sciences Centre*
3. *University of Toronto*
4. *Trillium Health Partners*

Purpose: In recognizing the importance of the cervical cancer prevention continuum, Cancer Care Ontario (CCO) is organizing provincial colposcopy services which will ultimately be integrated in the OCSP. Previously, there was no tool to communicate comprehensive performance metrics catered to colposcopy services. To fill that gap, the *Analytics Insider* presents key cervical screening and colposcopy indicators in a digestible format. It will be used to inform stakeholders, including colposcopists, and regional OCSP quality improvement activities.

Methods:

Target audience:

Audience includes regional leadership and physicians who perform colposcopy.

Analysis:

Descriptive statistics are used to summarize and describe screening and colposcopy data.

Format:

Infographics are used to display complex information in an easy-to-read format.

Results: Cancer Care Ontario developed the *Analytics Insider* with the first issue highlighting colposcopy services. It includes indicators that provide an overview and an insight into the quality of screening and colposcopy services across the province for the most recent four years of available data. *Analytics Insider* has been distributed to Regional Vice-Presidents and Regional Cervical Screening and Colposcopy Leads. Preliminary feedback from stakeholders were positive.

Conclusions: We anticipate that disseminating this information in this format will have impact on colposcopy service providers and can be leveraged for targeted regional quality improvement activities.

Keywords: cervical screening; colposcopy; analytics; OCSP

Themes: Prevention of Chronic Disease; Cancer Screening; Population Health

PHARMACOECONOMIC ANALYSIS FOR TAMOXIFEN OR EXEMESTANE WITH OVARIAN FUNCTION SUPPRESSION FOR HORMONAL RECEPTOR POSITIVE EARLY STAGE BREAST CANCER PATIENTS IN ONTARIO

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2. *Sunnybrook Health Sciences Centre*
3. *Lakeridge Health*
4. *Canadian Centre for Applied Research in Cancer Control*

Purpose: The purpose of this study was to estimate the cost-effectiveness of adjuvant exemestane (E) or tamoxifen (T) plus ovarian function suppression (OFS) compared to tamoxifen alone for hormone-receptor-positive (HR+) early stage breast cancer in premenopausal women at high risk of recurrence.

Methods: A partitioned-survival model was developed based on the chemotherapy (high-risk) subset of the SOFT clinical trial. Health states for disease-free survival (DFS), loco-regional recurrence, distant recurrence and death were modelled over a lifetime time horizon (50 years) from the Ontario public payer perspective. Costs (medications, administration, follow-up, recurrence, and adverse event management) and utility estimates obtained from literature were included, discounted at 1.5% per annum. Deterministic and probabilistic sensitivity analyses (PSA) were conducted. Uncertainty around long-term survival was explored within scenario analyses.

Results: E-OFS and T-OFS produced an estimated 1.52 QALYs and 1.55 QALYs gained at an additional \$9,940 and \$32,259, respectively. PSA showed 83% and 89% of simulations were below \$100,000/QALY threshold for E-OFS and T-OFS, respectively. The results were most sensitive to time horizon and discount rates. When no further DFS benefits were assumed immediately beyond the adjuvant treatment duration, the model produced slightly larger incremental cost-effectiveness ratios, but remained below \$100,000/QALY gained.

Conclusion: Adjuvant treatment with OFS appears to provide added benefits compared to tamoxifen alone as a result of reduced recurrence. Avoidance of the high costs associated with recurrence suggests the approach appears economically attractive, though the results depend on the long-term survival advantage and reduction in recurrence attributable to each treatment strategy.

Keywords: economics; tamoxifen; exemestane; hormonal positive; partitioned-survival

Themes: Value for Money; Value Determination

NEW INFRASTRUCTURE FOR PERSON-LEVEL COSTING IN ONTARIO: OPPORTUNITIES FOR NEW RESEARCH

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2. *University of British Columbia*

Purpose: Accurate, comprehensive, and accessible data on health system costs are essential to support CCO's "Value for Money" strategic focus. The objective of this project is to construct an infrastructure that links patients' encounters with the health system with their costs. This project leverages CCO's unique data assets in cancer and renal services to support operations and research.

Methods: The costing infrastructure links individual-level and date-specific health services with their costs. The period covered is April 1, 2012 to March 31, 2016. A range of administrative and clinical datasets, including DAD, NACRS, NRS, OHIP, NDFP, ODB, CCRS, HCD, and ALR, are used. Extending methods originally developed by ICES, an algorithm was developed for each dataset.

Results: The outcome is patient-level costs associated with each sector, reported by date of encounter. This data can be aggregated by person, health sector and over time to determine the cost of publicly-funded health services for cancer and renal care. This infrastructure provides opportunities to accurately report patients' episodes' costs and link costs with outcomes.

Conclusions: CCO's new cost infrastructure will serve as an invaluable resource for policy and decision-makers to measure health system costs across sectors and time. The infrastructure will open many new opportunities for real world cost-effectiveness analyses and observational data analyses. Leveraging CCO's unique population-based health services databases, the cost infrastructure allows a comprehensive assessment of patient-level health system costs for cancer and renal care. The new infrastructure is expected to support future cost-of-illness and value for money studies.

Keywords: health system costs; health care utilization; administrative data; value for money

Themes: Value for Money; Health Services Delivery; Value Determination

A PATIENT-FOCUSED UTILIZATION METRIC TO IMPROVE ACCESS TO CARE FOR PET/CT IMAGING IN THE STAGING OF AGGRESSIVE LYMPHOMA

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Cancer Care Ontario

Purpose: PET/CT scan utilization for staging aggressive lymphoma with curative intent has increased but remains below target benchmark of 50-65%. This study quantitatively measures utilization and highlights opportunities for outreach to support increasing utilization.

Methods: A retrospective study using linked administrative datasets between 2013 and 2016 estimated PET/CT scan utilization by consult hospital for lymphoma: patient proportion who received a PET/CT scan within two months before or after the first systemic consult (C1S).

Results: 5,824 aggressive lymphoma patients were diagnosed between 2013 and 2016 with their C1S occurring within 1 year post-diagnosis. Of those patients, 917 lived in Ontario and had a PET/CT scan within 2 months of the C1S. Provincial utilization was 4% in 2013 when the lymphoma registry launched. Utilization increased from 11% to 22% between 2014 and 2015 with the Lugano Classification publication supporting PET/CT for lymphoma staging. In 2016, provincial utilization was 23%. In 2016, there were 46 consult facilities with a median utilization of 20% and interquartile range of 10% to 28%. The top 10 consult facilities by C1S volume comprised 57% of total volume and had a median utilization of 22% and an interquartile range of 13% to 28%. If the 10 consult facilities increased their utilization rate to the lower benchmark of 50%, then provincial utilization would be 72%.

Conclusions: Utilization anchored upon C1S facility has provided an opportunity for targeted outreach strategies. The next step is to develop strategies to engage the top 10 consult facilities to increase utilization.

Keywords: utilization; PET/CT; lymphoma; patient centred care; outreach

Themes: Health System Improvements & Innovations; Health Services Delivery

CCO RESEARCH OFFICE

CCO RESEARCH NAVIGATION

The Research Office is pleased to assist you in navigating the research process at CCO. CCO is home to many research projects and 80+ population-level datasets, in addition to numerous research programs.

We can provide corporate-wide assistance with:

- information on funding opportunities (internal and external), partnerships, and research collaborations
- upcoming competitions and grant applications (including letters of support)
- agreements and contracts for host institutions and data sharing
- KTE activities/publication process
- access to datasets and content
- developing customized research protocols
- ethics for research, programmatic work, and quality improvement projects
- the research process at CCO

RESEARCH ROUNDS

Research Rounds are a monthly opportunity to connect with the research community at CCO. Join us to hear from a variety of CCO speakers and external partners, to learn more about research and related activities being undertaken at the organization, and to meet your CCO research colleagues.

Details on Research Rounds (monthly topics, location, call-in option) can be found on the CCO Research Office eCCO page.

CCO LIBRARY

CCO has an in-house library service to support the organization's strategic goals of producing and translating high-quality evidence and knowledge for Ontario's cancer and renal care systems. The CCO Library provides staff with access to peer-reviewed scientific literature that will ultimately be used to inform system-wide quality improvement within the Ontario healthcare system.

The CCO Library subscribes to a number of high-impact, peer-reviewed oncology, renal medicine, and other biomedical journals and databases. It is also a member of a large network of Canadian academic and hospital libraries and information centres that will facilitate access to numerous other titles not contained in CCO's library holdings via interlibrary loan.

Additional library services include:

- a responsive and timely literature review service that accommodates a wide variety of methodologies, review types and research topics; and,
- "Lunch & Learn" sessions and training workshops for search strategy development, critical evidence appraisal, database searching best practices and finding grey literature.

The CCO Library's online database and journal holdings, in addition to listings of library services, resources, and tools, are accessible via eCCO.

Please contact us at library@cancercare.on.ca for all your informational support needs.

CCO RESEARCH REPOSITORY

The CCO Research Office maintains and updates a repository of CCO research publications published since 2010. An online, accessible interface is being developed and is expected to launch later this year.

Criteria for inclusion in the repository are:

- research undertaken by CCO scientists, investigators and research staff;
- research funded or supported by CCO; and/or,
- research using CCO data.

To submit your publications and/or research, please complete the Publication or Conference Submission Form and **submit it to** library@cancercare.on.ca.

<https://collaborate.cancercare.on.ca/Sites/CCOLibrary/SitePages/Forms%20and%20Templates.aspx>

RESEARCH OFFICE CONTACT

Please contact the Research Office at research@cancercare.on.ca with any of your questions or visit the CCO Research Office eCCO page for all your CCO research needs. We look forward to working with you.

DATA DISCLOSURE TEAM, ANALYTICS AND INFORMATICS

CCO collects and manages some of the most comprehensive healthcare data holdings in Canada. In addition to healthcare system management and planning, the data is used to support population and health-services research.

DATA REQUEST PROCESS

The Data Disclosure process typically involves the following steps:

- Research Data Request Form submission;
- Data Disclosure Working Group review;
- Data Disclosure Subcommittee formal approval;
- Data extraction, analysis, and quality assurance;
- Data disclosure.

A cost-recovery model ensures CCO has the resources required to provide high quality data in an efficient manner. Request complexity will largely determine the time required for request completion. In general, requestors should plan for approximately two months from submission to approval, and an additional 60 business days for data disclosure.

In 2017, data was disclosed for 27 research requests. Requesters included hospitals (n=7), research facilities (n=16), and CCO scientists (n=4). On average, fulfillment required 32 analytic hours. Ontario Cancer Registry (OCR) data was most frequently requested. Other commonly requested sources include: Activity Level Reporting (ALR); Canadian Institute for Health Information Discharge Abstract Database (DAD) and National Ambulatory Care Reporting System (NACRS); New Drug Funding Program (NDFP); Pathology Reports; Symptom Management; and Wait Time Information System (WTIS).

CONTACT

Researchers are encouraged to contact DataRequest@cancercare.on.ca during the initial stages of study development for information regarding data availability, expected timelines, and estimated costs associated with data disclosures.

EVIDENCE SEARCH AND REVIEW SERVICE

The ESRS provides a range of evidence search and review services to CCO departments/programs on a cost recovery basis. The ESRS specializes in conducting searches/reviews for complex cancer service/system and/or policy questions where the evidence base and relevant search terms are unclear.

Our services include search/review guidance, critical appraisal, environmental scans, scoping reviews, meta-narrative reviews, guideline updates, systematic reviews, and developing manuscripts for publication. We offer a wide range of deliverables including: study protocols, data tables, screening reports and a range of in-depth synthesis reports.

The ESRS reviews are primarily conducted in three different formats:

1. preliminary literature reviews for quick turnaround projects;
2. rapid literature reviews for projects with targeted research questions and limited timelines; and
3. scoping/systematic reviews for projects that require an in-depth report to guide planning or to inform recommendations.

ESRS follows a four-step process when completing reviews. The following four distinct phases and their respective deliverables include:

1. Planning Phase: Planning Document (study protocol);
2. Screening Phase: Screening report highlighting relevant research evidence;
3. Data Extraction and/or Critical Appraisal Phase: Data tables and critically appraisal results; and
4. Data Synthesis Phase: Final synthesis reports and/or other unique deliverables upon request.

For project consultations and request, **please contact us at** ESRS@cancercare.on.ca or Jessica.Arias@cancercare.on.ca.

LEGAL & PRIVACY OFFICE

CCO's Legal & Privacy Office's (LPO) mission is to "Empower CCO and uphold public trust by providing valuable advice in compliance and risk management". LPO supports CCO's strategic objective of good governance, effective risk management and regulatory compliance by:

- Delivery of strategic, business-focused legal and privacy advice across CCO
- Enterprise Risk Management (ERM)
- Records & Information Management (RIM)
- Enterprise Compliance

In addition, LPO also oversees CCO's Board and Board Committee function.

Research and LPO

LPO adds value to CCO Research in various capacities by:

- Leveraging CCO's Prescribed Entity (PE)/Prescribed Registry (PR) Authority for Research
- Partnering with CRO to provide support in achieving objectives while minimizing residual risk to the organization
- Providing advisory services, and supporting the design and implementation of pragmatic, creative and relevant solutions for research initiatives (e.g., REB application development and review)
- Actively participating in corporate committees such as Data Disclosure Subcommittee
- Drafting and negotiating agreements such as DSAs, confidentiality agreements, research funding agreements, analytics funding agreements, services agreements, sub-grant agreements, legal agreement templates, and license agreements
- Assisting with external stakeholder engagement

Contact us at legalandprivacyoffice@cancercare.on.ca.

SURVEILLANCE AND CANCER REGISTRY DEPARTMENT

Comprised of the Ontario Cancer Registry (OCR), Surveillance, and Surveillance Research teams within CCO's Analytics & Informatics portfolio, we provide leadership in the collection, analysis, interpretation, and dissemination of cancer data and statistics. As the subject matter experts at CCO for the standards governing the cancer registry, the OCR team uniquely assembles and curates population-level cancer cases and deaths for all of Ontario. The Surveillance team has expertise in applying statistical methods and analytic tools to the data from the OCR and elsewhere to understand the current and future burden of cancer. Finally, the Research team investigates notable anomalies and trends in cancer data to gain further insights on cancer risk factors, burden and outcomes. We support researchers both within and outside CCO through our specialized skills and knowledge.

WE ARE YOUR GO-TO GROUP FOR QUERIES ABOUT

- cancer coding and classification
- linking cancer registry data to other datasets
- cancer stage at diagnosis
- cancer pathology data and reporting standards
- population-level cancer incidence, mortality, survival and prevalence
- statistical projections
- geospatial mapping and spatial epidemiology
- research design

TO ENABLE YOUR RESEARCH, WE PROVIDE

- Training sessions on pathology reporting and using OCR data
- Consultation on cancer data and statistics, including statistical methods, epidemiology and study design
- Access to cancer data and statistics, including:
 - customized analyses by request;
 - published statistical reports;
 - an online self-serve tool for custom statistics (Ontario Cancer Profiles); and
 - a statistical software package with pre-loaded cancer data (CCO SEER*Stat)

CONTACT

Researchers and analysts are **encouraged to contact** surveillance@cancercare.on.ca, ocrquestions@cancercare.on.ca or pathology@cancercare.on.ca