characteristics of incident and prevalent cancer cases in the CRN is essential for investigators to evaluate the feasibility of CRN research projects. **Methods:** Characteristics of health plan enrollees and prevalent (i.e., history of) and incident cancers were collected across the 9 funded CRN sites. Data were obtained from the CRN Cancer Counter – a tool to aggregate patient counts across sites from centralized summary data—as well as a centrally-developed SAS® program run against each site's Virtual Data Warehouse. Descriptive analyses focused on distributions of malignant cancer incidence and prevalence by age and anatomic site as well as by length of enrollment before and after diagnosis. **Results:** As of mid-2013, more than 9 million persons were enrolled in CRN site health plans. Of those enrollees, more than half a million were diagnosed with cancer during or before each site's last available year of cancer incidence data (2008-2011, varied by site). Prostate, breast, non-melanoma skin, and colon cancers had the highest prevalence and incidence. Overall, 22% of survivors were diagnosed prior to 1998. Examination of enrollees at one CRN site with a diagnosis of cancer in 2011 found that nearly half had been enrolled in the health plan for at least 15 years prior to diagnosis. Enrollment for cancer patients will be examined at additional CRN sites. **Conclusions:** The CRN is an excellent setting for prospective and retrospective studies of cancer etiology, screening, treatment and outcomes. Long periods of enrollment prior to cancer diagnosis facilitate retrospective studies of cancer etiology. Large numbers of cancer survivors with low disenrollment rates facilitate prospective observational studies and trials focused on cancer outcomes.

Keywords: Cancer Research Network; Epidemiology
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PS2-39:

Depression and Its Relationship to Perceived Financial Burden among Long-term Rectal Cancer Survivors with Ostomies and Anastomoses

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Background/Aims: Consequences of surgery for rectal cancer (permanent ostomy (PO), anastomosis (AN), or temporary ostomy (TO) followed by anastomosis) can affect survivors' psychological and financial well-being. We investigated depression and its association with perceived financial burden resulting from their illness/treatment among long-term (≥ 5 years post-diagnosis) survivors. **Methods:** A mail survey of 574 long-term rectal cancer survivors from Kaiser Permanente Northern California and Northwest was conducted in 2010-2011. The survey included questions on current depression and perceived financial burden from the City of Hope Quality of Life questionnaire. Responses were indicated on a scale where 0 = 'none' and 10 = 'severe'. Scores ≥ 4 were classified as depressed and ≥ 5 as high financial burden. ANOVA was used to contrast mean scores among surgery types. Linear regression models evaluated depression and perceived financial burden scores with co-variables. **Results:** Mean current depression level was 2.09 (SD = 2.40), with 23% (134 of 574) classified as depressed. PO survivors (N = 182) had the highest current depression levels (M = 2.46, SD = 2.61) compared to AN (N = 326, M = 1.96, SD = 2.37) and TO (N = 66, M = 1.68, SD = 1.81) ($P = 0.02$). These differences in depression by surgery type were significant after adjusting for age, sex, and race ($P = 0.015$). Survivors reported average perceived financial burden of 1.94 (SD = 2.72), with 18% (103 of 572) perceiving high financial burdens. PO survivors perceived highest burden (M = 2.5, SD = 2.92) compared to AN (M = 1.60, SD = 2.57) and TO (M = 2.12, SD = 2.65) ($P = 0.001$). After confounding adjustment, level of perceived financial burden was positively associated with higher current depression levels ($P < 0.001$). Surgery type did not modify this relationship, but it was stronger among those also reporting depression after surgery ($P = 0.04$). **Conclusions:** Current depression was frequent among these long-term survivors of rectal cancer and was highest among those with permanent ostomy. While current depression and perceived financial burden due to their illness/treatment were statistically associated, there were no differences by surgery type. Research is needed to identify factors influencing high depression and financial pressures among these rectal cancer survivors. Clinicians should be aware that long-term survivors, particularly with permanent ostomy, can have depression and financial

burdens resulting from their illness or treatment. Encouraging these survivors to receive psychosocial services may improve their well-being.

Keywords: Long-term rectal cancer survivors; Depression
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PS2-42:

All-cause Mortality is Decreased in Women Undergoing Annual Mammography Screening Before Breast Cancer Diagnosis

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Background/Aims: Annual mammogram screening for the early detection of breast cancer in women is recommended by most professional organizations beginning at the age of 40. However, the efficacy of annual mammography screening related to decreasing mortality remains an area of debate due to concerns regarding risk versus benefit. The potential for harm as a result of over-diagnosis of cancers that may not have been clinically significant extends beyond the extensively analyzed breast cancer-specific mortality. Therefore, we sought to examine screening mammography frequency and all-cause mortality in breast cancer patients. **Methods:** Primary breast cancer cases diagnosed within the Marshfield Clinic system from 2002 through 2008 were identified for retrospective review. Patients diagnosed with breast cancer at another facility, male breast cancer patients, and patients residing outside of Wisconsin and its neighboring states were excluded. Patient demographics and additional data, including number of mammograms performed within five years prior to breast cancer diagnosis, breast cancer stage, insurance status, family history, and comorbidities, were abstracted. Kaplan-Meier curves were generated to assess the association between mammography screening in the five years prior to breast cancer diagnosis and overall survival with adjustment for age, insurance status, number of medical encounters, comorbidities, family history, and calendar year. **Results:** A total of 1,422 women with breast cancer were included in the analysis. After adjustment, women who missed any of their last five annual screening mammograms had a 2.3-fold increase in all-cause mortality compared to subjects who participated in annual screening mammography. When subjects were stratified by the number of missed screening mammograms in the five years prior to breast cancer diagnosis, a progressive decline in survival was noted resulting in an all-cause mortality hazard ratio of 1.3 (95% confidence interval 1.19 – 1.37, $P < 0.0001$) for each additional missed mammogram. **Conclusions:** These results suggest that annual mammography prior to breast cancer diagnosis is predictive of increased overall survival. Importantly, a stepwise decline in overall survival was noted for each additional missed mammogram. These results are similar to findings for breast cancer-specific mortality and illustrate the importance of recommending annual screening mammography to all eligible women.

Keywords: Breast cancer; Mammograms
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Cardiovascular Disease

PS1-40:

Preventable Major Cardiovascular Events Due to Uncontrolled Glucose, Blood Pressure, and Lipids or Active Smoking in Adults With Diabetes With and Without Cardiovascular Disease

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Background/Aims: To analyze the incidence of major cardiovascular disease (CVD) hospitalization events and all-cause mortality among adults with diabetes with or without cardiovascular disease; and to estimate the proportion of preventable events due to uncontrolled lipids, glucose, blood pressure, and to active smoking. **Methods:** This was a retrospective cohort

study using electronic health records and administrative claims. We included individuals with diabetes from a network of 11 U.S. managed care organizations (SUPREME-DM datalink) from 2005 to 20110. Uncontrolled cholesterol was defined as LDL = 100 mg/dL or HDL = 40 (M)/<50 mg/dL (F), uncontrolled glucose as A1c = 8%, and elevated blood pressure as = 140/90 mmHg. Major CVD hospitalization events were identified based on primary discharge diagnoses from inpatient encounters for myocardial infarction (MI) or acute coronary syndrome (ACS), or congestive heart failure (CHF). Mortality data were derived from State Death Records and National Death Index. Five-year incidence rates and rate ratios were estimated using Poisson regression in multivariable models for individuals with and without diagnoses of CVD. Average attributable fractions were estimated for uncontrolled clinical factors and smoking. **Results:** The study cohort included more than 800,000 patients with diabetes. Mean age was 59 years (SD = 14), 48% were female, and 46% were White. Thirty-one percent had CVD diagnoses at cohort entry. Five-year event rates (per 100 person years) were 5.1 (MI/ACS), 4.5 (stroke), 7.1 (CHF) and 24.4 for all-cause mortality in patients with CVD; rates were 1.4 (MI/ACS), 1.2 (stroke), 1.0 (CHF) and 5.2 in patients without CVD. Twenty four percent of major CVD hospitalizations and 19% of deaths were attributable to uncontrolled clinical factors and smoking in patients with CVD; for individuals without CVD; 36% of major CVD hospitalizations events and 20% of deaths were similarly attributable to uncontrolled factors. **Conclusions:** Despite improvements in diabetes care, uncontrolled levels of clinical risk factors and smoking still account for more than 30% of CVD events in a population with diabetes. Additional attention to CVD risk factor control may importantly decrease adverse outcomes.

Keywords: Cardiovascular disease; Retrospective cohort

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PS2-12:

Opportunities to Improve Aspirin Utilization for the Primary Prevention of Cardiovascular Disease in a Regional Healthcare System

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Background/Aims: Aspirin is a cornerstone of primary cardiovascular disease prevention, but little is known about aspirin use patterns in primary care populations. Aspirin pharmacoepidemiology research presents some particular challenges within the HMO Research Network because aspirin is typically obtained over-the-counter and does not routinely appear in pharmacy claims data. This study leveraged electronic health records from the Marshfield Clinic to identify demographic, clinical, and geographic predictors of aspirin use in adults without cardiovascular disease. **Methods:** A cross-sectional study was used with years 2010-2012 data from 45-79 year old adults in the Marshfield Epidemiologic Study Area. Individuals who reported regular use (daily or every other day) of aspirin-containing medications during their most recent ambulatory encounter, or had an aspirin contraindication, were considered adherent to aspirin therapy. **Results:** Per national guideline, there were 6,950 adults in the target population who were clinically indicated for aspirin therapy for primary cardiovascular disease prevention. Aspirin was underutilized in this population overall, with less than half of all clinically indicated adults adherent to aspirin therapy. Statistically adjusted models found that individuals who were younger, female, not covered by health insurance, did not visit a medical provider regularly, were not obese, or did not have diabetes were least likely to use aspirin. In addition, aspirin use was less common in northeastern communities within the Marshfield Clinic service area. **Conclusions:** Demographic patterns of aspirin use in this study were largely consistent with previous findings, noting several aspirin use disparities in central Wisconsin adults without cardiovascular disease. Aspirin use was particularly low in those without diabetes and/or without regular physician contact. The methods outlined here on using electronic health records to conduct aspirin pharmacosurveillance can be adopted and refined by other HMO Research Network partners to optimize future cardiovascular disease (primary) prevention initiatives.

Keywords: Aspirin; Primary prevention

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PS2-13:

Personalized Physician Learning Intervention to Improve Hypertension Control: Randomized Trial Comparing Two Methods of Physician Profiling

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Background/Aims: To assess the impact of personalized physician learning (PPL) interventions using simulated learning cases on control of hypertension and dyslipidemias in primary care settings. **Methods:** One hundred thirty-two primary care physicians (PCP) with their 6307 patients with uncontrolled HT and their 20,030 patients with uncontrolled dyslipidemia were cluster randomized to one of three conditions: (a) no intervention, (b) PPL-EMR intervention in which 12 personalized learning cases were assigned to each PCP based on observed patterns of care in the electronic medical record (EMR) in the prior 1-year period, or (c) PPL-ASSESS intervention in which 12 personalized learning cases were assigned based on PCP performance on 4 standardized assessment cases. General and generalized linear mixed models were used to account for clustering and to model differences in actual patient outcomes across study arms. **Results:** Among those with uncontrolled HT at baseline, 49.1%, 46.6% and 47.3% ($P = 0.43$) achieved BP targets at follow-up, and among those with uncontrolled dyslipidemia at baseline, 37.5%, 37.3% and 38.1% ($P = 0.72$) achieved LDL targets at follow-up in PPL-EMR, PPL-ASSESS, and the control group, respectively. Although both SBP ($P < .001$) and lipid ($P < .001$) values significantly improved during the study period, the group x time interaction term showed no significant differential change in SBP values ($P = 0.51$) or lipid values ($P = 0.61$) across the 3 study arms. No difference in intervention effect was noted when comparing the PPL-EMR and the PPL-ASSESS interventions ($P = 0.47$). **Conclusions:** The two personalized physician learning interventions tested in this study did not lead to improved control of hypertension or dyslipidemia in primary care clinics during a mean 14-month follow-up period. This null result may have been due in part to substantial improvement in BP and lipid control in all study site patients during the study period.

Keywords: Hypertension; Quality improvement

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PS2-14:

The Electronic Communications and Home Blood Pressure Monitoring Trial - Long Term Results

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Background/Aims: In the Electronic Communications and Home Blood Pressure Trial (e-BP) patients with uncontrolled blood pressure (BP) were registered to use an existing patient shared electronic health record (EHR) and secure e-mail and randomly assigned to: (1) usual care (UC); (2) home BP monitoring (BPM) and website training; or (3) this plus pharmacist team-care delivered via the web (Pharm). At the end of intervention and one year later (1 and 2 years after randomization) Pharm patients were more likely to have controlled BP. The objective here was to determine if BP control improvements persisted longer term. **Methods:** The primary outcomes were change in systolic and diastolic BP and percent with BP control based on BP measures from the 4.5 year study visit. Modified Poisson regression estimated adjusted RR of BP control. Adjusted spline curves were used to evaluate blood pressures in the EHR. **Results:** BP control was 67%, 60%, and 65% in the UC, BPM, and Pharm groups respectively (adjusted RR 0.98; 95% CI (0.85, 1.13), Pharm vs. UC) at 4.5 years. For those with more severe systolic HTN (>160 mmHg) at baseline, BP control was 52%, 46%, and 55% (adjusted RR 1.05(0.70, 1.57), Pharm vs. UC) Analysis of BPs from the EHR showed similar results. **Conclusions:** Almost two thirds of patients with uncontrolled BP at baseline had controlled hypertension at 4.5 years. Group differences seen after the 1-year intervention did not persist long-term, with all groups improving. Longer-term or booster interventions may be needed.