C-C1-01:

Incremental Health Care Resource Costs by Phase of Cancer Care: Aged Versus Non-Aged Patients

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Background/Aims: Estimates of the nation's costs of cancer care are largely based on the SEER-Medicare datalink supplemented by modeling to estimate costs for non-aged patients. The SEER-Medicare data, however, are missing data on HMO (Medicare Advantage) enrollees with cancer. To address this shortfall, this study estimated the incremental medical care resources used to diagnose and treat cancer within integrated delivery systems stratified by phases of cancer care and patient age—before and after age 65. **Methods:** This study was conducted in four large group-model HMOs: Group Health Cooperative, Henry Ford Health System, Kaiser Permanente Colorado, and Kaiser Permanente Northwest. Eligible health plan members were enrolled in one of the participating health plans for at least 30 days between January 1, 2000, and December 31, 2008 and received a cancer diagnosis, documented in the health plan's tumor registry, prior to December 31, 2008. Individuals selected as controls met enrollment criteria and had no evidence of cancer before January 1, 2009 in the tumor registry. Controls were matched by age, gender, and years of health plan eligibility on a 5:1 ratio to cancer patients. Pseudo-diagnosis dates were assigned to non-cancer patients. Four phases of cancer care were defined: Prodromal/Diagnosis Phase—12 months prior to cancer diagnosis; Treatment Phase—12 months after cancer diagnosis; Surveillance Phase—period between Treatment Phase and End-of-Life Phase; and End-of-Life Phase—12 months prior to date of death (regardless of cause of death). Utilization data were extracted for all patients and controls for 2000-2008. Utilization measures included hospitalizations, inpatient days, doctor office visits, laboratory tests, imaging procedures, and medication dispensings. Average incremental monthly utilization rates were computed for each care phase for all cancer patients and for four specific cancer sites—breast, prostate, lung, and colon/rectum. **Results:** Incremental average monthly resource-use rates were highest in the treatment and end-of-life phases, and lowest in the diagnostic and surveillance phases. The duration of the surveillance phase was shorter for cancers diagnosed at later stages. **Conclusions:** Age at diagnosis had a non-linear impact on incremental costs of cancer care.

Keywords: Costs, Cancer, Economics

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PS2-10:

Anticoagulant Treatment of Venous Thromboembolism in Cancer Patients: Preliminary Findings

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Background/Aims: Injectable low-molecular-weight heparin (LMWH) monotherapy is recommended over other anticoagulant therapies (e.g., oral warfarin + injectible anticoagulant) for venous thromboembolism (VTE) in cancer patients based on superior clinical outcomes. The aim of this retrospective study was to evaluate the extent of use of LMWH for cancer patients with incident post-cancer diagnosis VTE. **Methods:** Patients aged ≥ 21 years with stage III and IV breast, colorectal, lung, and prostate cancer diagnosed between 2000-2007 at five Cancer Research Network (CRN) sites and diagnosed with VTE within two years of cancer diagnosis who received outpatient VTE treatment were included. Patient characteristics, clinical information, pharmacy and healthcare utilization, and mortality were obtained from the CRN Virtual Data Warehouse. Patients were followed for one year after VTE diagnosis. Outcomes include the rates of initial

anticoagulant(s) treatment within seven days of VTE diagnosis, VTE recurrence, and post-treatment bleeding. Logistic regression was used to identify factors associated with LMWH choice. **Results:** Data for 662 cancer patients from three study sites were available. Patients were primarily ≥ 65 years (52%, 347/662), male (52%, 347/662), diagnosed with stage IV cancer (54%, 360/662), lung cancer (51%, 338/662), received chemotherapy prior to VTE diagnosis (64%, 425/662), and had a mean Charlson-Deyo risk score of 1.6 (± 1.5). Only 29% (195/662) of patients received LMWH monotherapy while 69% (456/662) and 2% (11/662) received warfarin + an injectible anticoagulant and injectible fondaparinux, respectively. Recurrent VTE occurred in 1.6% (3/195) vs. 3.3% (15/456) of patients who received LMWH monotherapy vs. warfarin + injectible anticoagulant, respectively ($p=0.298$). Bleeding rates were similar across treatment groups ($p=0.710$). Factors independently associated with LMWH monotherapy treatment choice include stage IV cancer, lung cancer, reception of chemotherapy, and history of VTE diagnosis prior to cancer diagnosis. **Conclusions:** Adherence to evidence-based treatment recommendations for VTE in cancer patients was low. Future studies will analyze the data from all participating sites and should evaluate rationale(s) for patient/provider preference for LMWH monotherapy.

Keywords: Venous thromboembolism, Evidence-based, Low molecular weight heparin

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PS2-30:

Provider Attitudes and Experiences Concerning Communication Breakdowns in Cancer Care

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Background: Cancer providers strive to deliver high quality care, yet provider-patient communication breakdowns can occur and may contribute to adverse events and errors. A better understanding of cancer providers' perceptions of communication breakdowns could improve patient and provider satisfaction and patient safety. This study investigated providers' attitudes and experiences of communication breakdowns in cancer care. **Methods:** We recruited cancer care physicians and nurses at Kaiser Permanente Georgia, Group Health Cooperative, and Fallon Clinic for 1-hour focus groups. Discussions centered on three topics: communication breakdowns that contribute to adverse events or medical errors, unmet patient expectations, and suggestions for improvement. Recurrent themes are currently being identified using qualitative analysis. Preliminary results are presented below. **Results:** Nine focus groups were held with 48 providers (25 MD, 20 RN/NP, 3 other). Preliminary analysis reveals that providers feel that cancer presents unique communication challenges due to the strong emotional component of the diagnosis, the potential for blame for self or others, and, given the clinical choices patients face, information overload. Communication breakdowns between providers were generally seen as common; examples included breakdowns in information sharing and uncertain responsibility for talking to patients about prognosis. Examples of provider/patient communication challenges included physicians giving either false hope or alternatively no hope, and patients sometimes not telling providers about side effects and symptoms. Unmet patient expectations were frustrating for some providers, and reflected two related areas: 1) patient expectations that providers viewed as unrealistic; and 2) patient expectations resulting from their interactions with multiple providers. Providers felt that patients sometimes hesitate to mention their concerns about communication breakdowns for fear of disrupting their care. Providers believed communication breakdowns reflected both deficits in individual communication skills and system failures. Support was high for system-based strategies for improving communication, including new patient orientation, care coordinators, and a reporting system for communication breakdowns. **Conclusions:** Cancer care

providers believe communication breakdowns are common, reflect both deficits in provider skills and system failures, and often are unreported by patients. Providers and health systems should consider educational and structural changes to better address these concerns.

Keywords: Provider attitudes and beliefs, Cancer care

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PS2-05:

Short-Term Consequences of Screening Mammogram without Regular Physician Visits

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Background/Aims: The U.S. mammography screening rate is higher than rates of other preventive services among women, perhaps because efforts to encourage regular mammography have been relatively more effective than efforts to encourage other types of preventive care. The purposes of this study were to investigate the rate at which female members of Scott & White Health Plan received mammography without a primary care physician visit, and to identify any short-term health consequences of receiving mammography without other primary care services. **Methods:** This was a retrospective cohort study of female Scott & White Health Plan members between 2006 and 2009. We analyzed biennial mammography screening among women aged 40 through 69, following the Healthcare Effectiveness Data and Information Set (HEDIS) definition of screening mammography adherence. We considered primary care physician visits (PCP) as well as specialty provider visits during 12 month before and after the date of mammography in 2008. For the purpose of our analysis we divided the population into four groups: those who had any visit 12 months before the mammography screening date; those had any visit 12 months after that date; those had visits in both before and after the date; and finally those had visits in neither year. Our sample included 15,105 women who had mammography in 2008. **Results:** About 24% of women underwent mammography in 2008 without a PCP or specialty visit 12 months before or after the mammogram date. Members with no PCP or specialty visit 12 months before or after mammography had significantly lower rates of other periodic preventive screenings such as screenings for high cholesterol, diabetes, cervical cancer, and colon cancer. We found no significant impact on length of inpatient stays or emergency room visits for those who had no physician visit within 12 months of mammography. **Conclusions:** Mammography without PCP or specialty visits may adversely affect short-term preventive care utilization and long-term health outcomes. Because mammography screening was among the only contacts some women had with the healthcare system, it may be appropriate to introduce interventions for other types of preventive care when women present for screening mammography.

Keywords: Mammography, Primary care physician visit, Preventive screenings, Short-term health

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C-C1-02:

Validity of HMO Administrative Data for Breast Cancer Chemotherapy Exposure

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Background/Aims: Chemotherapy-related toxicity, while a major focus of randomized clinical trials, has been understudied in population-based research. Eight Cancer Research Network (CRN) sites used Virtual Data

Warehouse (VDW) data to examine the risk of cardiotoxicity following chemotherapy for invasive breast cancer. However, information on VDW chemotherapy data validity is limited. This study assessed the validity of VDW data related to the reception and dosages of cardiotoxic chemotherapeutic agents among breast cancer (BC) patients. **Methods:** This was a retrospective, cohort study of women ≥ 18 years diagnosed with incident, invasive BC between January 1999 and December 2007. Pharmacy and procedure chemotherapy data were extracted from each site's administrative databases for up to one year following cancer diagnosis date. Random samples of 50 patients stratified on trastuzumab, anthracyclines, and no chemotherapy exposure were selected from each CRN site for detailed medical chart abstraction. We calculated weighted sensitivities and specificities (and 95% confidence intervals [CI]) of using administrative data to accurately capture chemotherapy treatment compared to medical records. Median cumulative doses calculated from administrative data were compared to median doses obtained from the medical chart using the Spearman's correlation coefficient. **Results:** The total cohort included 13,497 BC patients. Patients in the random sample ($n=400$) had a mean age of 65 (± 14) years and were primarily white with most tumors diagnosed at AJCC stage 1 or 2. From the sample, 20% (80/400), 38% (152/400), and 40% (158/400) of patients had VDW exposure to trastuzumab, an anthracycline, and any type chemotherapy, respectively. Trastuzumab, anthracycline, and any chemotherapy sensitivities were 97% (CI=94%-98%), 97% (CI=93%-98%), and 99% (CI=97%-99%), respectively; and specificities were 99% (CI=98%-100%), 99% (CI=96%-99%), and 86% (CI=79%-91%), respectively. Median doses for trastuzumab and anthracyclines from administrative data were 227 mgs and 420 mgs, respectively, while median doses from the medical chart were 2370 mgs and 416 mgs, respectively ($r=0.60$, $p<0.001$ and $r=0.23$, $p=0.030$, respectively). **Conclusions:** Sensitivities and specificities for CRN chemotherapy administrative data were high and dosages were correlated moderately with chart information. These findings support the use of CRN data in evaluating chemotherapy exposures and related outcomes.

Keywords: Chemotherapy, Sensitivity, Breast cancer

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PS2-43:

Prostate-Specific Antigen Tests in Clinical Practice over the Past Decade: Is the Threshold for Recommending Biopsy Dropping?

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Background/Aims: A prostate specific antigen (PSA) level ≥ 4 ng/mL has historically been used as a screening threshold to recommend biopsy; however, guidelines have been changing to recommend lower cutoffs (2.5 ng/mL) and incorporate velocity in decisions to refer men to biopsy. Little is known about how physicians and patients respond to elevated PSA tests. Our objective was to examine trends in biopsy practices over the past decade to identify whether there has been a shift towards lowering PSA thresholds for biopsy referral. **Methods:** We reviewed electronic records, including laboratory results, for 59,764 members of Group Health who received a PSA test between 1998 and 2007. We identified 3 types of follow-up within 12 months of a test: biopsy, urology visit without a biopsy, or additional PSA testing. Log binomial models were used to examine the relative risk of biopsy within 12 months adjusting for covariates and accounting for clustering of repeated tests within subjects. **Results:** There appeared to be no shift over time towards lower thresholds for biopsy referral, with 3.0% (123/4,156), 3.1% (111/3,528) and 2.6% (91/3,565) of tests with PSA levels between 2.5 and 3.9 ng/ml resulting in biopsy among within 12 months in the calendar periods 1998-2001, 2002-2004, and 2005-2007 respectively, and 2.9% (325/11,249) overall. For tests with PSA ≥ 4.0 ng/ml, 29.7% (1,564/5,271), 26.4% (1,024/3,878), and 27.1% (1,027/3,786) resulted in biopsy across the three time periods, respectively, and 28.0% (3,615/12,935) overall. For tests with PSA levels < 2.5 ng/ml, the biopsy frequencies were 0.6% (160/28,188), 0.4% (120/27,690), and 0.4% (111/31,307), respectively and 0.4% (391/87,185) overall. Men with PSA levels ≥ 4.0 ng/ml who did not undergo