

PS1-25:

Incremental Costs of Cancer Care by Phase of Care for HMO Patients: Aged vs. Non-Aged

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Background/Aims: The majority of data on the medical costs of caring for cancer is based on aged Medicare beneficiaries treated in the indemnity/fee-for-service (FFS) system. Much fewer data are available on the costs of treating cancer in patients less than 65 years old. Using data from 4 CRN sites, we examined the cost of treating cancer by phase of care and stage of cancer for aged (65+) versus adult non-aged (greater than 18 and less than 65 years) HMO patients. **Methods:** We used a longitudinal case-control design to estimate cancer care costs for patients starting 12 months prior to diagnosis. Aged (N = 46,032) and non-aged (N = 46,423) HMO cancer patients were enrolled between 01/2000 and 12/2008. We sampled 171,448 aged and 203,312 non-aged controls from among all HMO members who had no tumor registry evidence of cancer prior to 2009. HMO controls were frequency matched to cancer cases on a 5-to-1 ratio by age group and gender. Health care utilization data were extracted for 2000-2008. Cost coefficients derived from modified national Medicare reimbursement systems were applied to utilization data and summed to total monthly costs per patient in 2008 dollars. Monthly costs were analyzed by four 12-month periods—Pre-diagnosis, Treatment, Survivorship, and End-of-life (EOL)—by case/control, aged/non-aged and stage I-III/IV. Only one year of Survivorship was included in this analysis. **Results:** Average monthly cost differences between aged and non-aged were reported. Pre-Diagnosis: Aged > Non-aged (difference of \$261, $P < 0.0001$); both groups see sharp increases in quarter prior to diagnosis. Treatment: Non-aged > Aged costs (\$201, $P < 0.0001$). Survivorship: Aged > Non-aged (\$44, $P < 0.0375$). EOL: Non-aged > Aged costs (\$2,173, $P < 0.0001$). All groups experienced accelerating EOL costs. Late-stage cancer costs were greater than costs of early-stage and, except for the Pre-diagnosis phase, non-aged late-stage costs were higher than aged late-stage. Late-stage cancer costs were more variable in the Survivorship phase. Aged and non-aged cases were significantly more expensive than their controls in all phases. **Conclusions:** Non-aged cases are more costly than aged cases during Treatment and EOL phases; however, pattern changes and age effects dominate during the Pre-diagnosis and Survivorship phases.

Keywords: Economics; Costs; Cancer

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PS1-26:

Treatment Costs of Advanced Cancer: Variation in Costs for Stage IV vs. Recurrent Breast, Colorectal, Lung, and Prostate Cancers

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Background/Aims: Previous studies have described the variation in utilization and costs associated with cancer patients diagnosed at late stage vs. early stage. Other studies have described the high cost of cancer care in the terminal phase. Little is known regarding variation of costs of advanced cancer care between patients diagnosed de novo with stage IV cancer versus those with recurrent metastatic cancer that develops after definitive therapy for early stage disease and a period of disease-free survival. Our aim is to compare total monthly medical care costs and resource use during the year after development of metastatic disease among patients presenting with stage IV disease and those with metastatic recurrence, using data from two CRN sites with tumor registries that capture recurrence, adjusting for age and non-cancer comorbidity. **Methods:** Patients aged 21 years and older with stage IV or metastatic recurrent breast, colorectal, lung, or prostate cancer diagnosed between 2000-2007 at two CRN sites were included in the analysis. Patients were followed for twelve months following diagnosis date (or through the end of 2008, or death, or disenrollment). Patient characteristics, comorbidities,

and mortality were obtained from the Virtual Data Warehouse (VDW). Estimates of costs were derived from the ‘HMO Costing Algorithm’ by adapting these systems to assign real (deflated) costs to utilization data as represented in VDW encounter and procedure files. Descriptive statistics and regression analyses were used to compare costs and resource use between cohorts in each data set. **Results:** 383 breast, 752 colorectal, 1,463 lung, and 364 prostate cancer patients were identified with stage IV or metastatic recurrent disease. Forty percent of patients were age <65 years. Differences in age at diagnosis, and the modified Charlson-Deyo comorbidity index for patients with de novo vs. recurrent disease varied by cancer site. Average total monthly costs were significantly higher for stage IV cases relative to recurrent cases, except for prostate cancer cases. The cost differential (stage IV – recurrent) was the highest for breast cancer cases at \$1,847. **Conclusions:** The findings from this analysis could have significant clinical and policy relevance related to the cost implications of treating advanced cancer.

Keywords: Health Economics; Costs; Cancer

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PS1-27:

Costs of Breast Cancer Care by Phase of Care: Medicare HMO vs. FFS Sectors

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Background/Aims: Cancer-related costs for Medicare beneficiaries in the indemnity/fee-for-service (FFS) option are well-analyzed, but costs for aged HMO-enrolled cancer patients are less studied. We compared monthly costs for aged breast cancer patients by payment scheme. **Methods:** Longitudinal case-control design: mean incremental monthly costs starting 12 months prior to diagnosis were estimated using health care utilization data from 4 HMOs and SEER-Medicare. Cases: 7,822 aged Medicare HMO and 74,236 SEER-Medicare FFS female enrollees diagnosed with breast cancer between 01/00-12/08. Controls: 36,232 aged Medicare HMO enrollees with no tumor registry evidence of cancer and 34,754 FFS SEER-Medicare non-cancer beneficiaries for the same time period. HMO controls were frequency matched to cases 5-to-1 by age group and gender. 2008 national Medicare reimbursement rates were applied to monthly use vectors extracted for 2000-2008 and summed to total costs per month per enrollee for each case and control. Costs were analyzed by stage (early [I-III] vs. late [IV]) and four phases of care, each of 12-months duration: pre-diagnosis; treatment; survivorship (first 12 months only); and end-of-life (EOL). Incremental cancer-related costs were computed by subtracting average annual costs for controls from cases from the corresponding payment scheme for the same time period. **Results:** Pre-Diagnosis: Incremental costs for FFS late-stage (LS) cases started at -\$140/mo. one year prior to diagnosis and finished the year at \$350/mo. Costs for FFS early-stage (ES) cases increased from -\$70/mo. to \$110/mo. HMO LS: -\$60/mo. to \$180/mo. HMO ES: \$0/mo. to \$120/mo. Treatment: FFS LS: \$10,100/mo. to \$1,400/mo. FFS ES: \$7,200/mo. to \$400/mo. HMO LS: \$5,000/mo. to \$1,600/mo. HMO ES: \$4,100/mo. to \$600/mo. Survivorship: FFS LS: \$1,575/mo. to \$940/mo. FFS ES: \$270/mo. to \$110/mo. HMO LS: \$1,050/mo. to \$550/mo. HMO ES decreased: \$350/mo. to \$200/mo. EOL: FFS LS: \$1,700/mo. to \$2,900/mo. FFS ES: \$700/mo. to \$1,200/mo. HMO LS: \$4,200/mo. to \$2,600/mo. HMO ES: \$300/mo. to \$1,000/mo. **Conclusions:** FFS controls exceeded HMO controls by >\$120/mo. in all phases. FFS treatment costs peaked at time of diagnosis for both staging groups and were much higher than HMO costs. HMO treatment costs peaked at 1 month after diagnosis. FFS treatment costs dropped below HMO costs by end of treatment.

Keywords: Cancer; Costs; Payment System

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