

Spending by Commercial Insurers on Chemotherapy Based on Site of Care, 2004-2014

The impact of price variation because of the site of care—receiving treatment in a physician office vs a hospital outpatient department (HOPD)—is an important driver of health care spending.¹ While patients may receive the same treatment in either setting, insurers typically reimburse payments to HOPDs at a higher rate than to physician offices. Hospitals justify this payment difference because they incur higher overhead costs and treat more medically complex patient populations.^{1,2}

Critics argue that the value of the services provided, rather than overhead expenses, should determine prices.² In this study, we describe trends in use of and spending for infused cancer chemotherapy in HOPD vs physician office settings from 2004 through 2014 among commercially insured patients.

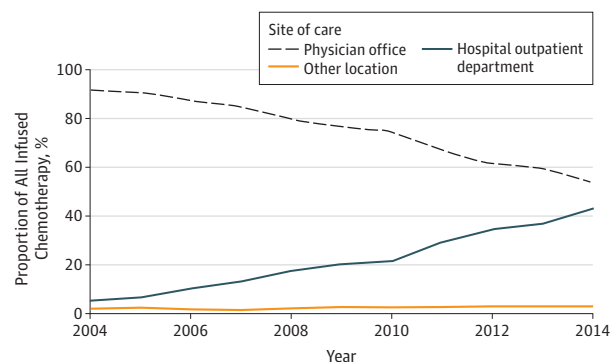
Methods | We used deidentified data from the MarketScan Commercial Claims and Encounters Database (<https://marketscan.truvenhealth.com/marketscanportal/>), which records patient and insurer payments for provided services, to identify individuals with at least 1 HOPD or physician office claim for physician-administered chemotherapy on which cancer-related diagnosis codes were recorded.³ There were 533 042 prevalent chemotherapy users who received 9 390 408 chemotherapy treatments from January 1, 2004, through December 31, 2014. We identified and restricted the cohort to 283 502 patients who initiated treatment with infused chemotherapy and remained enrolled continuously for 6 months, without receiving infused chemotherapy in the preceding 6 months. The University of North Carolina, Chapel Hill institutional review board waived study review. We conducted a sensitivity analysis that only included claims specific to the diagnosis code of breast cancer to ensure consistent results.

We measured health care expenditures in 3 ways: (1) line item drug level, (2) day level (ie, the sum of all expenditures on the day that a patient received chemotherapy), and (3) 6-month treatment-episode level (ie, the sum of reimbursements for all services received within 6 months after treatment initiation). Health expenditures are expressed in 2014 US dollars using the Consumer Price Index.

Site of care was classified as an HOPD, an office setting, or other location. We excluded observations during which patients received services in an unspecified location or received chemotherapy in both HOPD and offices (each <3% of claims annually).

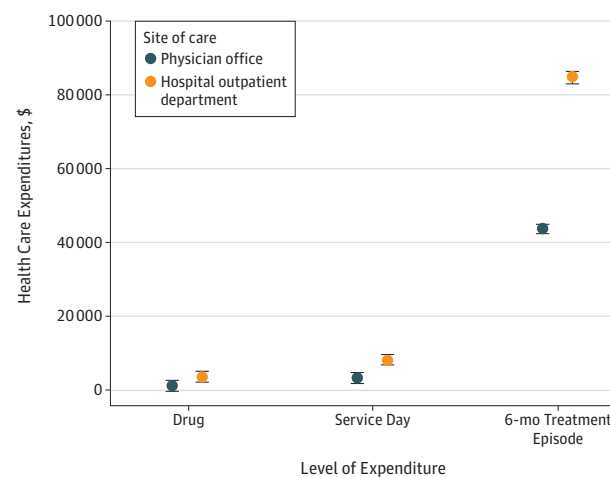
We used generalized linear models with a log link and gamma distribution, and clustered SEs to examine the association between site of care and each spending outcome. We also calculated the predicted reimbursement cost with the marginal standardization form of predictive margins.⁴ Statistical significance was defined as a 2-sided $P < .05$. For all models,

Figure 1. Shift in Site of Care for Infused Chemotherapy Among Commercially Insured Patients, 2004-2014



Analysis of the MarketScan Commercial Claims and Encounters Database for a prevalence cohort of commercially insured individuals who were treated with physician-administered infused chemotherapy.

Figure 2. Mean Adjusted Reimbursements Associated With Infused Chemotherapy Based on Site of Care



Spending was adjusted for age, sex, comorbidity (for 6-month treatment episode), year of diagnosis, drug administered, and metropolitan statistical area. "Other" category refers to metropolitan statistical areas that had 200 or fewer observations (<3%). Error bars represent 95% confidence intervals. All costs are inflation-adjusted to 2014 US dollars. Unit of analysis for drug level spending is at the claim level, service day spending is at the day level, and 6-month treatment-episode spending is at the person level.

we adjusted for age, sex, and year. We included fixed effects for the drug and metropolitan statistical area, which directly adjusts for regional differences in spending and differences in the drug administered. We adjusted for comorbidity in the 6-month treatment-episode model using the National Cancer Institute comorbidity index.⁵

Results | Of the 283 502 patients initiating treatment with infused chemotherapy between 2004 and 2014, patients receiving care in physician offices were older compared with those receiving care in HOPDs (mean, 54 vs 51 years; $P < .001$) and they had a statistically, but not clinically meaningful, lower comorbidity (comorbidity score of zero: 95% in offices vs 94% in HOPDs; $P < .001$). The rate of commercially insured patients receiving infused chemotherapy in HOPDs increased from 6 % of infusions in 2004 to 43% in 2014 (**Figure 1**).

Spending at the drug level was significantly lower in offices vs in HOPDs (\$1466; 95% CI, \$1457-\$1474 vs \$3799; 95% CI, \$3761-\$3836; $P < .001$). Day-level spending was lower for patients treated in offices (\$3502; 95% CI, \$3490-\$3515 vs \$7973; 95% CI, \$7927-\$8019; $P < .001$). Total reimbursement during the 6-month treatment-episode was also lower in offices (\$43 700; 95% CI, \$42 885-\$44 517 vs \$84 660; 95% CI, \$82 969-\$86 352; $P < .001$) (**Figure 2**). Sensitivity analysis on breast cancer patients found similar results.

Discussion | Shifting the provision of infused chemotherapy from physician offices to HOPDs is increasing and is associated with increased spending for chemotherapy services. The study's main limitation is the inability to identify whether the cost differential between physician offices and HOPDs is driven by facility fees. Owing to the limitation of claims data, we were not able to assess the stage or grade of the cancer diagnosis or to examine if the stage or grade of the cancer varies between sites. This study was not able to measure quality of care, which may vary by site of care. Potential targets for reduction of excess spending and creation of a more efficient health care system can come from private insurers following Medicare's lead, which has started to equalize payments across sites of care.⁶

Aaron N. Winn, PhD
Nancy L. Keating, MD
Justin G. Trogdon, PhD
Ethan M. Basch, MD
Stacie B. Dusetzina, PhD

Author Affiliations: Department of Clinical Sciences, Pharmacy School, Medical College of Wisconsin, Milwaukee (Winn); Department of Health Care Policy, Harvard Medical School, Boston, Massachusetts (Keating); University of North Carolina Lineberger Comprehensive Cancer Center, Chapel Hill (Trogdon, Basch, Dusetzina); Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina, Chapel Hill (Basch, Dusetzina); Division of Pharmaceutical Outcomes and Policy, Eshelman School of Pharmacy, University of North Carolina, Chapel Hill (Dusetzina).

Corresponding Author: Aaron N. Winn, PhD, Department of Clinical Sciences, Pharmacy School, Medical College of Wisconsin, 8701 W Watertown Plank Rd, Milwaukee, WI 53226 (awinn@mcw.edu).

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Study concept and design: Winn, Dusetzina.

Acquisition, analysis, or interpretation of data: Winn, Keating, Dusetzina.

Drafting of the manuscript: Winn, Keating, Dusetzina, Trogdon.

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Statistical analysis: Winn, Dusetzina.

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