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The impact of commercial health plan benefits on out-of-pocket burden for women with metastatic breast cancer

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Abstract

PURPOSE: High-deductible health plan (HDHP) enrollment is expanding rapidly and might substantially increase out-of-pocket (OOP) payment burden. We examined trends in total and OOP health service expenditures overall and by insurance coverage type among women with metastatic breast cancer.

METHODS: We used a longitudinal time series design to examine measures among 5364 women with metastatic breast cancer insured by a large US health insurer from 2004 to 2011. We measured outcomes during the 12 months after a first identified metastatic breast cancer diagnosis and required women to have at least 6 months of prior enrollment. We plotted enrollment measures and adjusted spending and fit trend lines using linear first-order autoregressive models.

RESULTS: Between 2004-2011, the percentage of women with metastatic breast cancer enrolled in HDHPs increased from 8% to 23% while the percentage enrolled in low-deductible plans (LDHPs) decreased from 69% to 37%. Over the same time period, estimated inflation-adjusted total health service spending per person-year increased from \$96,899 to \$104,688 (increase of \$1,197 per year; 95% confidence interval [CI]: \$47,\$2,348). Corresponding OOP spending values were \$4,496 and \$5,151 (\$91 per year trend; 95% CI: -\$13,\$195). Women in HDHPs and LDHPs had estimated annual OOP spending of \$6,642 (95% CI: \$6,268,\$7,016) and \$4,247 (95% CI: \$3,956,\$4,538), respectively.

CONCLUSIONS: OOP spending among women with metastatic breast cancer was 55% higher among HDHP than LDHP members, and HDHP enrollment increased substantially from 2004-2011. Stakeholders and policymakers should design health plans that protect financially vulnerable cancer patients from high OOP costs.

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INTRODUCTION

Breast cancer is the second leading cause of cancer mortality among US women, with an estimated 40,610 deaths in 2017. [1–3] Approximately 6–10% of patients with breast cancer have metastases at diagnosis and 30–40% will eventually develop metastatic disease. [4–7]

Although breast cancer-related mortality has fallen over time due to a variety of factors including improved treatment regimens, [8] advancements have come at steep costs for society and patients. From 2003–2008, the incremental annual total healthcare costs per patient were \$5,100 for inpatient services, \$37,231 for outpatient care, and \$1,037 for prescription drugs. [9–12] Data from 2000–2006 estimated mean cumulative total healthcare costs of \$128,556 per patient over a mean duration of follow-up of about 18 months from date of chemotherapy initiation.[13] A more recent study using 2003–2009 data detected average total direct medical costs of \$9,788 per-patient-per-month.[14, 15]

Commercial health insurance arrangement such as high-deductible health plans (HDHPs) require substantial annual out-of-pocket (OOP) spending of approximately \$1,000 to \$6,000 per person, a burden that disproportionally affects patients with expensive diseases such as cancer. Proponents of such health plans argue that HDHPs will reduce low-value care while preserving high-value care. These plans have continued to expand under the Affordable Care Act, leading to 51% of persons with employer-sponsored insurance having deductibles of \$1000 or more and 23% having deductibles of \$2000 or more.[16]

To our knowledge, no previous studies have examined health service and OOP spending by benefit type among women with metastatic breast cancer, a particularly vulnerable patient population with expected high costs of care. Our objective was to examine trends in insurance type arrangements, in total health service expenditures, and in OOP spending by benefit type among women with newly diagnosed metastatic breast cancer. We also sought to compare changes in spending before and after an incident metastatic breast cancer diagnosis among HDHP members versus low-deductible health plan (LDHP) members.

METHODS

Data source and study population

We drew our study population from commercially insured members in the deidentified de-identified Clinformatics data mart (OptumInsight) (Eden Prairie, MN) enrolled between July 2003 and December 2012. Data comprised enrollment information and administrative (medical, pharmacy and hospitalization) claims from members of a large national health insurer in all 50 US states.

We used a previously established algorithm[17] validated by Hurvitz et al[18] to create a cohort of women with metastatic breast cancer in health insurance claims data. Flowchart 1 displays details of the cohort including information on inclusion and exclusion criteria, International Classification of Diseases, 9th revision (ICD-9) codes and relevant sample sizes. We included women with metastatic breast cancer, aged 25 to 64, who had their diagnosis of metastatic breast cancer (disease index date) after January 2004 and before

December 2011, were enrolled between July 2003 and December 2012 and had at least 18 months (six months before and 12 months after their first diagnosis of metastatic breast cancer) of enrollment.

Further, we identified employers who offered only low-deductible (\$500 or less) or high-deductible (\$1000 or more) health insurance plans to their employees in a given benefit year, then categorized women based on their employers' health insurance offerings. To determine employers' annual deductibles, we used a benefits variable that was available for most small employers (approximately 100 employees) and included information such as in-network and out-of-network deductible, copayment, and coinsurance amounts. For larger employers (42.4% of account years), we imputed deductible levels using out-of-pocket spending among employees who used health services, an algorithm that had 96.2% sensitivity and 97.0% specificity. [19]

For all analyses, we first assessed all women with metastatic breast cancer. Our subgroups of interest were women at employers that only offered HDHPs (to reduce self-selection effects) and we compared them to women whose employers only offered LDHPs.

Outcome measures

To assess the economic impact of employer-based health plans on women with metastatic breast cancer we used three measures: *enrollment in health insurance types, total health service expenditure and total out-of-pocket (OOP) spending*.

To estimate changes in *enrollment* in different benefit types, we calculated annual enrollment rates for each health plan type.

Total health service expenditure, a proxy measure of total utilization, estimates a health insurer's "amount allowed", the sum of health plan expenditures and patient OOP payments for all reimbursed health services (e.g., outpatient, emergency department, hospital and pharmacy spending). This variable was standardized by the data vendor to 2012 dollars and across geography. To minimize the influence of extreme outliers, we winsorized monthly data to the top 0.1% of all health service spending.[20]

Total OOP spending, a measure of the economic burden of metastatic breast cancer on patients, is the sum of all patient expenditures (e.g., outpatient, emergency department, hospital and pharmacy spending) including coinsurance, copayment and deductible amounts. To account for inflation, we adjusted for the 2012 Consumer Price Index Medical Care component (MCPI) as published by the Bureau of Labor Statistics.[21] We again winsorized monthly data to the top 0.1% of all OOP spending. [20] We also performed sub-analyses of medical versus pharmacy OOP spending.

For annual calendar trend analyses, we first assigned each woman's spending (OOP and health service) to the calendar year of her disease index date; then we calculated *mean spending per person year* by summing all expenditures for the women assigned to a given calendar year and dividing by the sum of their person-years of post-index date enrollment (maximum of 1 year). In analyses of all women with metastatic breast cancer meeting inclusion criteria, each woman had 1 year of follow-up enrollment. During that year, women

might have had partial years of enrollment in HDHP versus LDHP; their person-time was assigned to each type as appropriate.

For analyses of spending before and after the metastatic breast cancer diagnosis, we summed monthly spending in the 6 months before and 12 months after the disease index date.

Covariates

Members were classified as residing in predominantly Caucasian or African American neighborhoods on the basis of living in census block groups with greater than 66% of residents of the given race. Members from census block groups that did not fall into those two categories were classified as from “mixed” racial composition neighborhoods. To generate proxy measures of socio-economic status (SES), we created previously established [22] categorical variables of census block group poverty and education levels derived from 2000 US Census reports.[23] Women were classified as residing in low SES neighborhoods if they lived in census block groups with low education (more than 25% of households with less than high school education) or low income (more than 10% of households below poverty level). Women not in the low SES group were classified as higher SES. During the 6 months preceding the index metastatic breast cancer diagnosis, members were also classified as having lower morbidity if their morbidity score (Johns Hopkins ACG® System comorbidity score; ACG, version 10.0.1) was below 3.0 and higher morbidity if the ACG score was greater than or equal to 3.0.[24, 25] The ACG score was developed on a standardized population so that a score of 1.0 represents average health. Other covariates included age category (25 – 39, 40 – 49, 50 – 64 years) and US region (West, Midwest, South, and Northeast).

Statistical analysis

In this retrospective cohort study, we first calculated characteristics of the study groups of interest (HDHP and LDHP members) in 2004, 2008, and 2011. Continuous measures are reported as mean (SD), categorical variables are reported as count and percentage of the total. [26]

To assess changes in enrollment, we calculated percentages of person years of women enrolled in LDHP and HDHP in the total cohort, and then ran a linear first-order autoregressive model to compare statistical estimates (trend and level changes) between the low-deductible and high-deductible groups. A woman could have spent months in both a LDHP and a HDHP if her employer mandated a change in the year after her metastatic breast cancer diagnosis.

To adjust annual spending per calendar year for changing population characteristics, we used generalized estimating equation (GEE) modeling with a gamma distribution, controlling for year and month of first metastatic breast cancer diagnosis, socio-economic status (SES), age, race/ethnicity, and US region. We then calculated marginal effect [27–29] by calendar year to generate yearly spending amount estimates adjusted for the above covariates. In analyses restricted to the HDHP and LDHP group, we also included a benefit type variable (HDHP or LDHP) and a term interacting benefit type and calendar year. We also calculated marginal

effects using this interaction term to derive adjusted spending estimates per study group per calendar year.

We then plotted the fully adjusted data points and fit trend lines using linear first-order autoregressive models to compare statistical estimates (trend and level changes) of total health service spending and OOP spending (medical and pharmacy OOP spending) between low-deductible and high-deductible health plans groups.[30]

To compare cost burden relative to the index month, we plotted monthly OOP spending 6 months before and 12 months after the first diagnosis, again using STATA GEE model.

Statistical analyses were performed using SAS, version 9.4 (SAS Institute Inc, Cary, NC) and STATA version 12.1 (Stata Corp, College Station, TX). We tested all covariates for inclusion in multivariate models, and using backward selection, we retained terms with p-values of 0.2 and under. The research protocol was approved by the Harvard Pilgrim Health Care Institutional Review Board.

RESULTS

Baseline characteristics

A total of 5364 women with metastatic breast cancer were identified, of whom 13% died during the observation period (Table 1). Most women were from predominantly white neighborhoods (77%), aged between 50-64 years (58%), from the South (45%), residing in high-SES neighborhoods (70%), and with ACG morbidity scores under 3.0 (74%) prior to metastatic breast cancer diagnosis. Our subgroups of interest comprised 3721 women whose employers offered either only HDHPs or only LDHPs. An increasing percentage of HDHP members were from the Midwest (2004: 28% and 2011: 41%) and of low socio-economic status (2004: 23% and 2011: 31%) over time.

Changes in annual enrollment

Among all women included in the study cohort, the percentage enrolled in HDHP increased significantly over time from 8% in 2004 to 23% in 2011 (Figure 1), an annual increase of 2% per year (95%CI: 2%, 3%). At the same time, enrollment in LDHPs decreased from 69% in 2004 to 37% in 2011 or by -5% per year [-6%, -4%].

Annual spending per calendar year

Among the subgroup of women with metastatic breast cancer whose employers only offered LDHPs or HDHPs, estimated adjusted total health service expenditure increased from \$96,899 in 2004 to \$104,688 in 2011 (\$1197 increase per year [\$47, \$2348]; Figure 2 and Table 2). Total estimated adjusted OOP spending was \$4496 in 2004 and \$5151 in 2011 (an estimated \$91 [-\$13, \$195] change per year). Total health service spending trends among women across all health plan types (including women with choices in plans) were similar to overall trends among women in mandated HDHPs and LDHPs (Supplement 1).

Annual spending per calendar year stratified by subgroups

Spending measures stratified by health plan type demonstrated that, in 2004, women in LDHPs had higher estimated total health service expenditure (\$98,841 [\$92,089, \$105,592]) than women in HDHPs (\$85,924 [\$74,450, \$97,398]; Figure 3 and Table 2). Total health service expenditure for women in LDHPs was \$8,771 ([\$3,545, \$13,877] no trend detected) higher than for women in HDHP.

Women in HDHPs paid significantly more OOP for health services (\$6,642 [\$6,268, \$7,016]) than women in LDHPs (\$4,247 [\$3,956, \$4,538]), levels that did not change from 2004-2011 in either group. Thus, women in HDHPs experienced 55% [44%, 66%] more OOP spending than women in LDHP. OOP spending was mostly driven by medical expenses (including costs for injectable chemotherapies, hospitalization etc.) as opposed to outpatient pharmacy spending (Supplement 2).

OOP spending relative to first diagnosis of metastatic breast cancer

OOP spending peaked dramatically in the month of metastatic breast cancer diagnosis and was consistently higher among HDHP versus LDHP members. (Figure 4) While women in LDHPs and in HDHPs paid on average inflation and marginally adjusted \$151 and \$281 per month, respectively, six months before their first diagnosis with breast cancer, their OOP spending peaked in the month of diagnosis at \$945 for LDHP members and \$1,842 for HDHP members. Average monthly OOP spending in the year after the first diagnosis was \$279 for women in LDHPs and to \$441 for women in HDHPs.

DISCUSSION

In this population-based cohort of 3721 younger commercially insured women with metastatic breast cancer in LDHPs and HDHPs, an increasing proportion were enrolled in HDHPs, reaching 23% by 2011. Total health service expenditure were high and increased between 2004-2011, while OOP spending did not increase to a statistically significant degree. When stratifying by health insurance type, we found that women in HDHPs averaged \$6,642 in annual OOP spending as compared to \$4,247 among women in LDHPs. Thus, increasing enrollment in HDHPs combined with their high average OOP obligations implies that commercially insured women with metastatic breast cancer will increasingly face higher OOP spending.

High OOP spending raises concerns regarding the financial burden of metastatic breast cancer care, especially because HDHP enrollment continues to increase rapidly. [16] Although we did not have access to women's premium payments, and thus are unable to compare the total cost sharing burden of HDHP and LDHP members, it is likely that HDHP members pay greater combined total premiums and OOP payments than LDHP members.

To our knowledge, this is the first study examining OOP spending and benefits types among younger, privately insured women with metastatic breast cancer. Our results confirm previous findings of high OOP spending in metastatic breast cancer, especially in the month of the first diagnosis.[9, 14, 31, 32] We add the unique finding that the growth of HDHPs

and the trend toward employers offering only plans with high deductibles is likely to drive OOP spending increases among women with metastatic breast cancer going forward.

HDHPs are intended to incentivize patients to reduce discretionary care and mitigate premium increases.[33, 34] However, patients with metastatic breast cancer are likely to exceed annual deductibles and reach out-of-pocket maximums in the peri-diagnosis period, while also facing a life-threatening disease. Thus, “value-shopping” seems less likely to play a role in utilization choices, although annual deductible and OOP maximum resets could still lead to conscientiousness about value among HDHP members with metastatic breast cancer.

Despite uncertain premium differences between HDHP and LDHP members, it is very likely that HDHP members have a higher overall cost burden, which might cause these patients challenges in affording other important life expenses such as food, education, and housing. Health insurance premiums add substantially to the financial burden of patients. [35] The overall financial burden among patients in HDHPs is especially concerning because of unremitting increases in HDHP enrollment; the Kaiser Family Foundation Employer Health Benefits Survey showed an increase from 22% in 2009 to 51% in 2017. [36]

To put our findings into perspective, a woman with metastatic breast cancer who was enrolled in a HDHP and earned the 2011 federal minimum wage of \$7.25 per hour [37] would spend 46% of her annual salary of about \$14,500 to cover her average annual OOP obligations for metastatic breast cancer treatment of \$6,642 without spending anything else for rent, food or other necessary services. Furthermore, the 2011 mean annual out-of-pocket spending of \$6,642 represents 13% of the 2011 real median income household of \$50,054. [38]

It is important to note that OOP obligations among women we defined as in LDHPs are also substantial and could cause adverse effects.

Our results add to a growing literature quantifying the extent and consequences of high out-of-pocket spending for cancer treatments, often referred to as financial distress or financial toxicity.[39–41] *Nipp et al (2016)* showed that financial distress caused by cancer therapies caused patients to adjust their lifestyle by spending less on food or clothing or leisure activities and adopting potentially harmful strategies such as not filling prescriptions or taking less medication than prescribed. [41–46] Further, high out-of-pocket spending for cancer treatments can often lead to personal bankruptcy. [47, 48] *Ramsey et al (2016)* showed that “severe financial distress requiring bankruptcy protection after cancer diagnosis appears to be a factor for mortality.”[49]

Based on emerging evidence from HDHP studies,[29, 50, 51] researchers have recently advocated for “population-tailored” health plans that seek to improve health outcomes and equity by targeting reduced OOP obligations based on rigorous evidence of a population’s response to financial incentives. Our findings provide a basis for subsequent studies that could determine whether high-value care is reduced among HDHP members and whether such reductions are concentrated among vulnerable populations such as low-income women.

Our study has several limitations. First, the health insurance claims-based algorithm we used to identify metastatic breast cancer might have misclassified some women, but any misclassification is unlikely to differ by HDHP vs LDHP status. Second, our algorithm is unable to reliably distinguish between de novo metastatic breast cancer and progressed early stage cancer, conditions that might have different costs. Third, we measured health service and out-of-pocket spending as captured in claims data, which does not capture the full burden of expenses related to metastatic breast cancer such as premiums, travel spending, or lost wages. Additionally, our findings only apply to commercially insured patients.

CONCLUSION

Between 2004 - 2011, an increasing proportion of commercially insured women with metastatic breast cancer were enrolled in HDHPs. Compared to women in LDHPs, women in HDHPs paid higher annual OOP costs -- approximately \$6,600 -- over our study period. Thus, increasing enrollment in HDHPs combined with their high average OOP obligations implies that commercially insured women with metastatic breast cancer will increasingly face higher OOP spending. HDHP membership was also associated with slightly lower total health spending compared with low-deductible enrollment, and further research should assess causes and health impacts of this finding. Stakeholders and policymakers should develop plan designs that protect financially vulnerable cancer patients from the high OOP costs.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Enrollment per person year	Intercept	95% CI		Trend	95% CI	
		Lower bound	Upper bound		Lower bound	Upper bound
LDHP	73%	68%	78%	-5%	-6%	-4%
HDHP	5%	2%	8%	2%	2%	3%

Figure 1: Annual enrollment among women with metastatic breast cancer in employer-mandated LDHPs and HDHPs, 2004-2011*

* This analysis is based on the overall metastatic breast cancer cohort (n = 5364) in all health benefit plan types (including high-deductible, low-deductible, and other plan types including choice, middle and unclassified deductible levels).

Abbreviations: HDHP = high-deductible health plan, LDHP = low-deductible health plan

Total adjusted annual health service spending

Total adjusted annual OOP spending

Figure 2: Total annual adjusted health service and OOP spending by women with metastatic breast cancer and employer-mandated deductible levels, 2004-11*

* These analyses are based on the metastatic breast cancer cohort limited to women in either low-deductible or high-deductible plans by employer mandate (n = 3721). The graphs display person time observed in each health plan per calendar year, meaning that a woman could have been counted twice in a given year if she switched plan during the calendar year. Total health service spending includes spending for medical, pharmacy and confinement services of the health plan as well as out-of-pocket spending for patients. Using marginal effects methods, spending estimates were derived from generalized estimating equations

models adjusted for year/month of first mbc diagnosis, SES level, age, race/ethnicity, US region, and winsorized to 0.1% of all monthly health service spending.

Annual OOP spending was adjusted to the 2012 Consumer Price Index Medical Care component. Using marginal effects methods, OOP spending estimates were derived from generalized estimating equations models adjusted for year/month of first mbc diagnosis, SES level, age, race/ethnicity, US region, and winsorized to 0.1% of all monthly health service spending. Trend lines were fitted using linear first-order autoregressive models.

Abbreviations: mbc = metastatic breast cancer, OOP = out-of-pocket spending, SES = socioeconomic status

Total adjusted annual health service spending

Total adjusted annual OOP spending

Figure 3: Total annual adjusted health service and OOP spending by women with metastatic breast cancer in LDHPs versus HDHPs, 2004-11*

* These analyses are based on the metastatic breast cancer cohort limited to women in either low-deductible or high-deductible plans by employer mandate (n = 3721). The graphs display person time observed in each health plan per calendar year, meaning that a woman could have been counted twice in a given year if she switched plan during the calendar year. Total health service spending includes spending for medical, pharmacy and confinement services of the health plan as well as out-of-pocket spending for patients. Using marginal effects methods, spending estimates were derived from generalized estimating equations models adjusted for year/month of first mbc diagnosis, SES level, age, race/ethnicity, US region, and winsorized to 0.1% of all monthly health service spending.

Annual OOP spending was adjusted to the 2012 Consumer Price Index Medical Care component. Using marginal effects methods, OOP spending estimates were derived from generalized estimating equations models adjusted for year/month of first mbc diagnosis, SES level, age, race/ethnicity, US region, and winsorized to 0.1% of all monthly health service spending.

Trend lines were fitted using linear first-order autoregressive models.

Abbreviations: HDHP = high-deductible health plan, LDHP = low-deductible health plan, mbc = metastatic breast cancer, OOP = out-of-pocket spending, SES = socio-economic status

Figure 4: Inflation-adjusted monthly OOP spending, relative to date of first diagnosis, by women with metastatic breast cancer in LDHPs and HDHPs, 2004 – 2011*

* This analysis is based on a cohort of N = 3721 women with either low-deductible or high-deductible plans. The graph displays person time observed in each health plan.

Monthly OOP spending was adjusted to the 2012 Consumer Price Index Medical Care component. Using marginal effects methods, OOP spending estimates were derived from generalized estimating equations models adjusted for the relative month to the first mbc diagnosis, deductible level, SES level, age, race/ethnicity, US region, and winsorized to 0.1% of all monthly health service spending.

Trend lines were fitted using linear first-order autoregressive models.

Abbreviations: HDHP = high deductible health plan, LDHP = low-deductible health plan, OOP = out-of-pocket spending

Flowchart 1: Definition of metastatic breast cancer cohort

Abbreviations: BC = breast cancer, HDHP = high deductible health plan, N= number, SM = secondary malignant

Source: based on

Table 1:

Characteristics of women with metastatic breast cancer identified in 2004, 2008, 2011

	No. (%)						
	Total (people)	Year 2004 (n = 268) ¹		Year 2008 (n = 695) ¹		Year 2011 (n = 757) ¹	
		LDHP	HDHP	LDHP	HDHP	LDHP	HDHP
Women	5364	185 (69)	21 (8)	305 (44)	135 (19)	281 (37)	2128 (23)
Dying	696 (13)	-	-	-	-	-	-
<i>Neighborhood racial composition²</i>							
African American	184 (3)	6 (3)	0.4 (2)	9 (3)	3 (2)	15 (5)	7 (4)
Mixed	1041 (19)	27 (15)	4 (19)	66 (22)	18 (13)	55 (20)	30 (17)
Caucasian	4127 (77)	152 (82)	16 (76)	230 (75)	114 (85)	211 (75)	141 (79)
<i>Age-at-diagnosis</i>							
Age 25 - 39	522 (10)	24 (13)	2 (9)	27 (9)	11 (8)	28 (10)	18 (10)
Age 40 - 49	1697 (32)	60 (32)	8 (38)	103 (34)	44 (33)	94 (33)	52 (29)
Age 50 - 64	3145 (58)	101 (55)	11 (53)	175 (57)	80 (59)	159 (57)	107 (61)
<i>Geographic region³</i>							
Northeast	542 (10)	24 (13)	0 (0)	34 (11)	7 (5)	34 (12)	7 (4)
West	817 (15)	22 (12)	5 (24)	51 (17)	16 (12)	45 (16)	18 (10)
Midwest	1587 (30)	66 (36)	6 (29)	91 (30)	55 (41)	78 (28)	72 (41)
South	2414 (45)	73 (39)	10 (47)	129 (42)	57 (42)	123 (44)	80 (45)
<i>Socio-economic status (SES)⁴</i>							
Low SES	1594 (30)	55 (30)	5 (24)	75 (25)	40 (30)	80 (28)	55 (31)
High SES	3770 (70)	130 (70)	16 (76)	230 (75)	94 (70)	201 (72)	123 (69)
<i>Mean ACG</i>							
ACG score > 3.0	1416 (26)	41 (22)	6 (29)	83 (27)	39 (29)	88 (31)	46 (26)
ACG score 0 - 3.0	3948 (74)	144 (78)	15 (71)	221 (73)	95 (71)	193 (69)	131 (74)

Abbreviations: ACG = Adjusted Clinical Groups, HDHP = high deductible health plan, LDHP = low-deductible health plan, SES = socio-economic status

¹ Person years observed among women in all health plan types (n = 5364).

² *African American:* residing in predominantly African American (66%) neighborhoods

Caucasian: residing in predominantly Caucasian (66%) neighborhoods

Mixed = women with Hispanic or Asian surname as well as women residing in predominantly mixed neighborhoods
14 observations are missing.

³ 4 observations are missing.

⁴ *Low SES:* > 25% only high school education or > 10% below poverty

High SES: <25% only high school education or <10% below poverty

Table 2:

Adjusted annual spending (US \$) among women with metastatic breast cancer in LDHPs and HDHPs, 2004 – 2011 *

	Intercept	95% CI		Trend	95% CI	
		Lower bound	Upper bound		Lower bound	Upper bound
Total annual health service spending (\$)	97,125	91,313	102,936	1,197	47	2,348
Total annual OOP spending (\$)	4,416	3,892	4,941	91	–13	195
Total annual health service spending (\$)						
LDHP	98,841	92,089	105,592	1,264	–73	2,601
HDHP	85,924	74,450	97,398	2,199	–74	4,471
Difference between LDHP and HDHP	8,771	3,545	13,877	-	-	-
Total annual OOP spending (\$)						
LDHP	4,247	3,956	4,538	-	-	-
HDHP	6,642	6,268	7,016	-	-	-
Difference between LDHP and HDHP	–2,905	–3,847	–1,962	133	–73	300

* These analyses are based on the metastatic breast cancer cohort limited to women in either low-deductible or high-deductible plans (n = 3721). The table displays person time observed in each health plan per calendar year, meaning that a woman could have been counted twice in a given year if she switched plan during the calendar year.

Abbreviations: HDHP = high deductible health plan, LDHP = low-deductible health plan, OOP = out-of-pocket spending