Out-of-Pocket Costs by Cancer Stage Among Medicare Advantage-Insured Patients: 2016-2020

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BACKGROUND

- Disease burden due to cancer in the US is significant
  - Approximately half of men and a third of women will develop invasive cancer within their lifetime;[1] In 2022, 1.9 million new US cancer cases were estimated[2]
  - Cancer is the second leading cause of death in the US;[3] In 2022, 609,360 cancer-related deaths were estimated[2]
- Cancer diagnosis at earlier stages, before spread or progression, may be associated with decreased morbidity and mortality as well as lower treatment and management costs,[4] which can translate to a decrease in related out-of-pocket (OOP) patient costs
- Financial burden is recognized as an important consideration in cancer care
- A cancer diagnosis can result in substantial financial and emotional burden for patients
  - Cancer patients incurred an estimated $16.2 billion in OOP costs for cancer care in 2019[5]
  - 42% of newly diagnosed patients with cancer are estimated to deplete their life assets within 2 years[6]
  - It has been estimated that nearly half of cancer patients experience substantial economic burden,[7] which may lead to poorer quality of life, emotional distress, and reduced treatment adherence and access, further widening existing disparities in care and clinical outcomes[8-17]

OBJECTIVE

- Estimate the annual and cumulative mean patient OOP costs by cancer stage at diagnosis from years 1-3 post diagnosis

METHODS

- A retrospective analysis was conducted with Optum's de-identified Integrated Claims-Clinical dataset with Enriched Oncology, which includes data from Medicare Advantage and commercially insured members
- Adult Medicare Advantage-insured patients identified with staged breast, colorectal, lung, or prostate cancer diagnosed between 1/1/2016-6/30/2020 with continuous enrollment for ≥1-month post-diagnosis were included
- OOP costs included copay, coinsurance, and deductible
- Mean OOP costs were calculated in each month over a 3-year period post-cancer diagnosis among those with continuous enrollment and no death reported in the month
- Mean annual OOP cost per patient was estimated by summing the month 1-12 (year 1), 13-24 (year 2), and 25-36 (year 3) costs and stratifying by stage at cancer diagnosis
- Mean cumulative year 1-3 OOP costs were calculated by summing the annual estimates and stratifying by stage at cancer diagnosis

KEY RESULTS: MEDICARE ADVANTAGE-INSURED PATIENT CUMULATIVE YEAR 1-3 OOP COSTS WERE GENERALLY HIGHER IN PATIENTS WITH LATER CANCER STAGING AT DIAGNOSIS

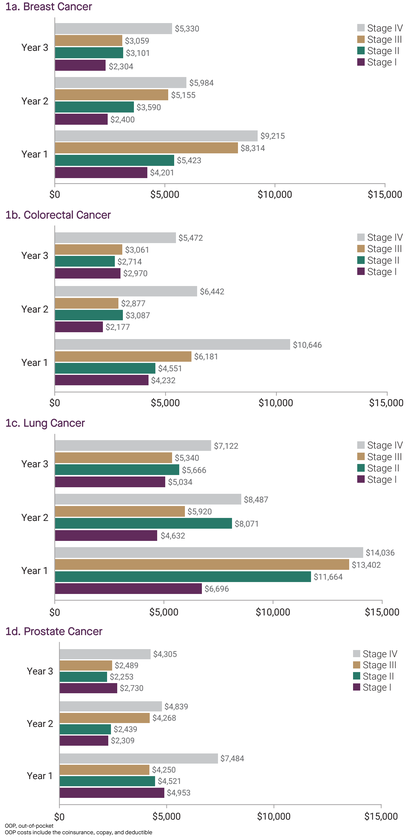
- Among members insured by a Medicare Advantage plan and diagnosed with breast, colorectal, lung, or prostate cancer from 2016-2020, 5,161 eligible members were identified for inclusion in this analysis (**Table 1**):
  - Breast cancer: 2,003 (39%)
  - Colorectal cancer: 772 (15%)
  - Lung cancer: 1,687 (33%)
  - Prostate cancer: 699 (14%)
- Across all four cancer types reported, the mean age ranged from 69.2 to 74.0 years
- For members diagnosed with cancers not predominately or exclusively among females or males (colorectal and lung), the percentage female ranged from 46.9% to 56.1%
- Most individuals resided in the Midwest (33.3% to 47.4%) or the Northeast (18.1% to 54.8%)
- Mean Charlson Comorbidity Index (CCI) was ≤ 2.2 for all cancers reported

Table 1. Patient Demographics and Characteristics

		Stage I	Stage II	Stage III	Stage IV
Breast Cancer		**N=2,003**			
n		1020	670	166	147
Age, mean (SD), years[a]		70.5 (7.2)	69.4 (8.3)	69.7 (8.5)	69.5 (9.6)
Female Gender, n (%)[a]		1,018 (99.8)	657 (98.1)	164 (98.8)	147 (100.0)
Geographic Region, n (%)[a,b]	Midwest	473 (46.4)	302 (45.1)	75 (45.2)	49 (33.3)
	Northeast	202 (19.8)	126 (18.8)	30 (18.1)	35 (23.8)
	South	153 (15.0)	145 (21.6)	36 (21.7)	43 (29.3)
	West	172 (16.9)	82 (12.2)	18 (10.8)	16 (10.9)
	Unknown	20 (2.0)	15 (2.2)	7 (4.2)	4 (2.7)
CCI, mean (SD)[c]		0.9 (1.4)	1.0 (1.5)	1.1 (1.5)	1.1 (1.6)
Colorectal Cancer		**N=772**			
n		103	219	271	179
Age, mean (SD), years[a]		72.4 (7.4)	72.8 (9.0)	72.3 (8.7)	70.8 (9.5)
Female Gender, n (%)[a]		55 (53.4)	111 (50.7)	127 (46.9)	96 (53.6)
Geographic Region, n (%)[a,b]	Midwest	41 (39.8)	89 (40.6)	113 (41.7)	76 (42.5)
	Northeast	24 (23.3)	46 (21.0)	72 (26.6)	36 (20.1)
	South	26 (25.2)	53 (24.2)	57 (21.0)	47 (26.3)
	West	10 (9.7)	22 (10.0)	17 (6.3)	15 (8.4)
	Unknown	2 (1.9)	9 (4.1)	12 (4.4)	5 (2.8)
CCI, mean (SD)[c]		1.6 (2.1)	1.6 (1.9)	1.6 (1.8)	1.4 (1.7)
Lung Cancer		**N=1,687**			
n		419	237	367	664
Age, mean (SD), years[a]		72.5 (7.6)	71.2 (8.0)	71.0 (8.1)	71.9 (7.5)
Female Gender, n (%)[a]		235 (56.1)	118 (49.8)	182 (49.6)	319 (48.0)
Geographic Region, n (%)[a,b]	Midwest	177 (42.2)	106 (44.7)	174 (47.4)	266 (40.1)
	Northeast	118 (28.2)	53 (22.4)	73 (19.9)	157 (23.6)
	South	75 (17.9)	50 (21.1)	80 (21.8)	152 (22.9)
	West	37 (8.8)	18 (7.6)	28 (7.6)	70 (10.5)
	Unknown	12 (2.9)	10 (4.2)	12 (3.3)	19 (2.9)
CCI, mean (SD)[c]		2.2 (2.0)	2.0 (1.9)	2.1 (1.9)	2.1 (2.0)
Prostate Cancer		**N=699**			
n		115	280	87	217
Age, mean (SD), years[a]		69.2 (6.5)	70.5 (6.4)	71.8 (6.7)	74.0 (7.9)
Female Gender, n (%)[a]		0 (0)	0 (0)	0 (0)	0 (0)
Geographic Region, n (%)[a,b]	Midwest	41 (35.7)	132 (47.1)	37 (42.5)	86 (39.6)
	Northeast	63 (54.8)	92 (32.9)	23 (26.4)	62 (28.6)
	South	9 (7.8)	30 (10.7)	24 (27.6)	38 (17.5)
	West	1 (0.9)	17 (6.1)	2 (2.3)	21 (9.7)
	Unknown	1 (0.9)	9 (3.2)	1 (1.1)	10 (4.6)
CCI, mean (SD)[c]		1.1 (1.5)	1.0 (1.5)	1.5 (2.0)	1.3 (1.7)

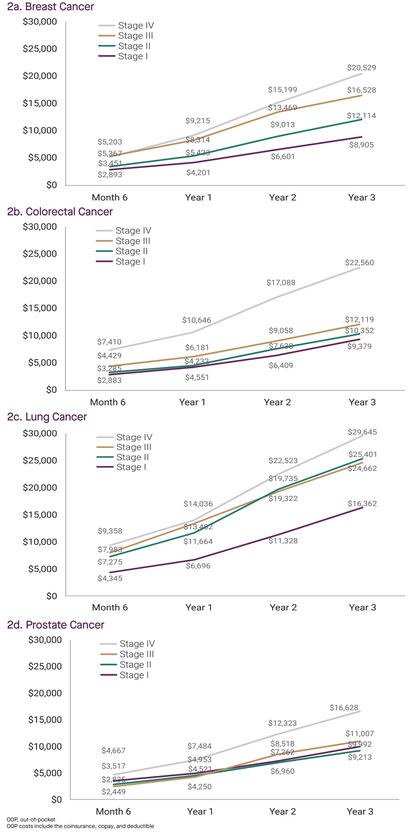
CCI, Charlson Comorbidity Index; SD, standard deviation.
[a]Demographics were calculated at the time of cancer diagnosis; [b]Percentages may not total to 100% due to rounding.
[c]CCI was calculated among subjects with 6 months of continuous insurance eligibility prior to their cancer diagnosis.

Figure 1. Annual Mean OOP Costs, Year 1-3 Post Diagnosis



OOP, out-of-pocket
OOP costs include the coinsurance, copay, and deductible

Figure 2. Cumulative Mean OOP Costs, Year 1-3 Post Diagnosis



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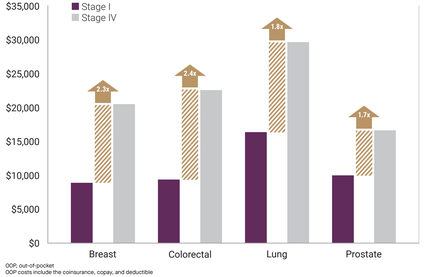
- Annual and cumulative mean OOP costs generally increased by stage at diagnosis from year 1 to 3 (**Figures 1** and **2**)
- Mean year 1 OOP costs generally increased by stage at diagnosis (mean cost difference stage I to IV, all cancers: p<0.001) (**Table 2**)
- Absolute difference in cumulative mean OOP costs, year 1 to 3 post diagnosis, from stage I to stage IV (**Figure 3**):
  - Breast cancer by +$11,624, (2.3x increase)
  - Colorectal cancer by +$13,181 (2.4x increase)
  - Lung cancer by +$13,283 (1.8x increase)
  - Prostate cancer by +$6,636 (1.7x increase)

Table 2. OOP Costs, Year 1 Post Diagnosis

	Stage I	Stage II	Stage III	Stage IV
Breast Cancer	**N=2,003**			
n	1,020	670	166	147
mean (SD)	$4,201 ($3,062)	$5,423 ($4,116)	$8,314 ($5,750)	$9,215 ($5,082)
median (range)	$1,082 ($0-$144,020)	$1,052 ($0-$162,359)	$1,810 ($0-$119,957)	$2,262 ($0-$96,523)
Colorectal Cancer	**N=772**			
n	103	219	271	179
mean (SD)	$4,232 ($3,001)	$4,551 ($3,845)	$6,181 ($4,198)	$10,646 ($7,367)
median (range)	$967 ($2-$53,307)	$1,019 ($0-$86,032)	$1,457 ($0-$112,773)	$3,169 ($0-$169,508)
Lung Cancer	**N=1,687**			
n	419	237	367	664
mean (SD)	$6,696 ($5,627)	$11,664 ($8,419)	$13,402 ($23,402)	$14,036 ($9,114)
median (range)	$1,559 ($0-$182,858)	$2,584 ($0-$222,199)	$2,874 ($0-$505,645)	$3,187 ($0-$231,840)
Prostate Cancer	**N=699**			
n	115	280	87	217
mean (SD)	$4,953 ($5,555)	$4,521 ($3,150)	$4,250 ($2,433)	$7,484 ($4,801)
median (range)	$716 ($0-$124,409)	$1,056 ($0-$89,384)	$1,270 ($0-$42,131)	$1,927 ($0-$119,976)

Figure 3. Absolute Increase from Stage I to IV in Cumulative Mean OOP Costs, Year 1-3 Post Diagnosis



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CONCLUSIONS

- OOP cost represents a considerable burden to Medicare Advantage patients diagnosed with cancer
- Patients diagnosed with later (IV) versus earlier (I) stage cancer had significantly higher mean cumulative OOP costs in the 3-year period after cancer diagnosis
- Given that recent data suggest almost half of US households (46%) did not have enough cash on hand to cover a $400 unexpected expense,[18] OOP costs similar to estimates from this study could tip a cancer patient into financial toxicity
- Additionally, estimated OOP costs are conservative as only recorded coinsurance, copay, and deductible were included, which may not reflect the entire scope of OOP costs cancer patients manage (e.g., insurance premiums, travel, and accommodations)
- Earlier cancer detection may enable more efficient treatment and reduce patient OOP cost burden by lessening the need for intensive treatment and management and associated OOP costs

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