Health Care Related Costs of Treatment Delay Among Medicare Beneficiaries Diagnosed with Colon Cancer

Supplement Tables

Table 1: Demographic information for individuals diagnosed with colon cancer and treated between 0- and 6-months following diagnosis

	Total Population (N=1,234)	No Treatment Delay (N=690)	Treatment Delay (N=544)	P-Value
Age, mean (SD)	76.2 (7.6)	76.7 (7.9)	75.6 (7.2)	0.02
Age Group, n (%)				0.09
65-74	510 (48.2)	276 (44.7)	234 (48.1)	
75-84	415 (37.6)	228 (36.9)	187 (38.4)	
85+	180 (16.3)	114 (18.5)	66 (13.6)	
Sex, n (%)				0.4
Male	542 (43.9)	296 (42.9)	246 (45.2)	
Female	692 (56.1)	394 (57.1)	298 (54.8)	
Race, n (%)				0.08
Non-Hispanic White	1044 (84.6)	590 (85.5)	454 (83.5)	
Non-Hispanic Black	84 (6.8)	51 (7.4)	33 (6.1)	
AAPI/American Indian	46 (3.7)	25 (3.6)	21 (3.9)	
Unknown/Other	60 (4.9)	24 (3.5)	36 (6.6)	
Region, n (%)				<0.01
West	413 (33.5)	214 (31)	199 (36.6)	
Midwest	176 (14.3)	118 (17.1)	58 (10.7)	
Northeast	279 (22.6)	153 (22.2)	126 (23.2)	
South	366 (29.7)	205 (29.7)	161 (29.6)	
Urban v. Rural				0.12
Urban	1,203 (97.5)	669 (97.0)	534 (98.3)	
Rural/Missing	31 (2.5)	21 (3.0)	10 (1.7)	
Medically Underserved Area (MUA)				0.16
Not a MUA or Population	808 (65.3)	436 (63.2)	370 (68.0)	
MUA or Population	365 (29.6)	214 (31.0)	151 (27.8)	
Missing	63 (5.1)	40 (5.8)	23 (4.2)	
Year of Diagnosis, n (%)				0.3
2016	431 (34.9)	250 (36.2)	181 (33.3)	

2017	435 (35.3)	246 (35.7)	189 (34.7)	
2018	368 (29.8)	194 (28.1)	174 (32)	
Charlson-Deyo score, n (%)				0.55
0	491 (39.8)	265 (40.2)	226 (43.1)	
1	271 (22.0)	151 (22.9)	120 (22.9)	
2	169 (13.7)	93 (14.1)	76 (14.5)	
3+	254 (20.6)	151 (22.9)	103 (19.6)	
Missing	49 (4.0)	30 (0.05)	19 (0.04)	

Footnote:
Percentages may not total to 100 due to rounding

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Table 2: Results from the GLM predicting inpatient cost in the 12-months following colon cancer treatment initiation

Adjusted: log (Total Cost) $=\beta 0+\beta 1(X_{delay})+\beta 2(X_{age})+\beta 3(X_{race})+\beta 4(X_{region})+\beta 5(X_{CCI})+\beta 6(X_{MUA})+e$

Variable	cost ratio	SE	P-Value
Intercept	21,994.37	0.13	<0.01
Delay	0.54	0.09	0.50
Age Group			
65-74	Reference		
75-84	0.97	0.10	0.78
85+	0.89	0.13	0.37
Race			
Non-Hispanic White	Reference		
Non-Hispanic Black	1.56	0.18	0.02
AAPI/American Indian	0.87	0.24	0.55
Unknown/Other	0.81	0.21	0.33
Region			
West	Reference		
Midwest	0.63	0.15	<0.01
Northeast	1.17	0.12	0.21
South	0.80	0.12	0.06
CCI			
0	Reference		
1	1.02	0.12	0.88
2	0.98	0.14	0.90
3+	1.20	0.12	0.14
Medically Underserved Area (MUA)			
MUA or Population	1.04	0.10	0.68
Not a MUA or Population	Reference		

Table 3: Results from the GLM Predicting Outpatient costs in the 12-months following colon cancer treatment initiation

Adjusted: log *(*Outpatient Cost) $=\beta 0+\beta 1(X_{delay})+\beta 2(X_{age})+\beta 3(X_{race})+\beta 4(X_{region})+\beta 5(X_{CCI})+\beta 6(X_{MUA})+e$

Variable	cost ratio	SE	P-Value
Intercept	6,835.96	0.17	<0.01
Delay	1.28	0.13	0.05
Age Group			
65-74	Reference		
75-84	0.83	0.14	0.19
85+	0.48	0.19	<0.01
Race			
Non-Hispanic White	Reference		
Non-Hispanic Black	0.97	0.25	0.89
AAPI/American Indian	0.81	0.32	0.52
Unknown/Other	0.82	0.29	0.49
Region			
West	Reference		
Midwest	0.65	0.20	0.03
Northeast	1.60	0.18	0.01
South	0.88	0.17	0.43
CCI			
0	Reference		
1	0.92	0.17	0.60
2	0.86	0.19	0.44
3+	1.08	0.17	0.65
Medically Underserved Area (MUA)			
MUA or Population	1.22	0.14	0.16
Not a MUA or Population	Reference		

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Table 4: Two stage model predicting inpatient costs in the 12-months following colon cancer treatment initiation. Model 1 predicts the odds of cost greater than $0 and model 2 predicts inpatient cost given cost greater than $0.

Model 1: Odds Positive Inpatient Costs= $\beta 0+\beta 1(X_{delay})+\beta 2(X_{age})+\beta 3(X_{race})+\beta 4(X_{region})+\beta 5(X_{CCI})+\beta 6(X_{MUA})+\varepsilon$
Model 2: Log(Inpatient Costs | cost > 0) = $\beta 0+\beta 1(X_{delay})+\beta 2(X_{age})+\beta 3(X_{race})+\beta 4(X_{region})+\beta 5(X_{CCI})+\beta 6(X_{MUA})+\varepsilon$

Variable	Model 1	Model 2
	OR (SE)	Cost Ratio (SE)
Intercept	0.82 (0.17)	29207.18 (0.12) **
Treatment Delay		
Delay	0.61 (0.13) **	1.15 (0.1)
No Delay	Reference	
Age Group		
65-74	Reference	
75-84	0.91 (0.14)	1.14 (0.1)
85+	0.97 (0.18)	1.11 (0.13)
Race		
Non-Hispanic White	Reference	
Non-Hispanic Black	1.13 (0.25)	1.7 (0.18) **
AAPI/American Indian	1.12 (0.32)	0.85 (0.23)
Unknown/Other	0.9 (0.3)	0.84 (0.22)
Region		
West	Reference	
Midwest	0.86 (0.2)	0.73 (0.15) **
Northeast	1.17 (0.17)	0.97 (0.12)
South	1.13 (0.16)	0.73 (0.12) **
CCI		
0	Reference	
1	1.09 (0.16)	1.02 (0.12)
2	1.01 (0.19)	0.95 (0.14)
3+	1.23 (0.16)	1.04 (0.12)
Medically Underserved Area (MUA)		
MUA or Population	0.89 (0.14)	1.02 (0.1)
Not a MUA or Population	Reference	

Footnote:
*Indicates significance at a = 0.1
** indicates significance at a = 0.05

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Table 5: Two stage model predicting out-of-pocket cost in the 12-months following colon cancer treatment initiation. Model 1 predicts the odds of cost greater than $0 and model 2 predicts inpatient cost given cost greater than $0.

Model 1: Odds Positive out-of-pocket Costs= $\beta 0+\beta 1(X_{delay})+\beta 2(X_{age})+\beta 3(X_{race})+\beta 4(X_{region})+\beta 5(X_{CCI})+\beta 6(X_{MUA})+\varepsilon$

Model 2: Log(out-of-pocket Costs | cost > 0) = $\beta 0+\beta 1(X_{delay})+\beta 2(X_{age})+\beta 3(X_{race})+\beta 4(X_{region})+\beta 5(X_{CCI})+\beta 6(X_{MUA})+\varepsilon$

Variable	Model 1	Model 2
	OR (SE)	Cost Ratio (SE)
Intercept	7.5 (0.28)	3079.52 (0.13) **
Treatment Delay		
Delay	0.85 (0.2)	0.96 (0.09)
No Delay	Reference	
Age Group		
65-74	Reference	
75-84	1.03 (0.23)	0.9 (0.11)
85+	0.53 (0.26)	0.97 (0.14)
Race		
Non-Hispanic White	Reference	
Non-Hispanic Black	0.48 (0.36)	1.41 (0.19)
AAPI/American Indian	1.32 (0.55)	0.79 (0.24)
Unknown/Other	0.71 (0.41)	0.82 (0.23)
Region		
West	Reference	
Midwest	1.54 (0.37)	0.81 (0.15)
Northeast	0.88 (0.27)	1.23 (0.13)
South	0.75 (0.26)	0.88 (0.12)
CCI		
0	Reference	
1	1.58 (0.26)	0.99 (0.12)
2	2.6 (0.37)	1.03 (0.14)
3+	1.68 (0.27)	1.18 (0.12)
Medically Underserved Area (MUA)		
MUA or Population	1.93 (0.25)	1.11 (0.1)
Not a MUA or Population	Reference	

Footnote:
*Indicates significance at a = 0.1
** indicates significance at a = 0.05