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Late-Stage Diagnosis and Cost of Colorectal Cancer Treatment in Two State Medicaid Programs

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Abstract

Introduction: To assess timing of Medicaid enrollment with late-stage colorectal cancer (CRC) diagnosis and estimate treatment costs by stage at diagnosis.

Methods: We analyzed 2000–2009 California and Texas Medicaid data linked with cancer registry data. We assessed the association of Medicaid enrollment timing with late-stage colorectal cancer and estimated total and incremental 6-month treatment costs to Medicaid by stage using a noncancer comparison group matched on age group and sex.

Results: Compared with Medicaid enrollment before diagnosis, enrolling after diagnosis was associated with late-stage diagnosis. Incremental per-person treatment costs were $31,063, $39,834, and $47,161 for localized, regional, and distant stage in California, respectively; and $28,701, $38,212, and $49,634 in Texas, respectively.

Discussion: In California and Texas, Medicaid enrollment after CRC diagnosis was associated with later-stage disease and higher treatment costs. Facilitating timely and continuous Medicaid enrollment may lead to earlier stage at diagnosis, reduced costs, and improved outcomes.

Keywords

cancer; cost; late-stage diagnosis; Medicaid; treatment

Introduction

Race and ethnicity have been documented as important factors in determining colorectal cancer (CRC) incidence and outcomes. Non-Hispanic Blacks or African Americans (hereafter referred to Blacks or African Americans) compared with non-Hispanic Whites have a higher incidence of CRC, are diagnosed more often with distant-stage disease, and have a lower 5-year relative survival at any given stage.[1–5] Hispanics experience disparities as well. They are diagnosed less often with early-stage CRC compared with non-Hispanic Whites,

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their incidence rates are increasing in comparison to non-Hispanic Whites, and they have worse outcomes when diagnosed with metastatic disease.[2,6]

Medicaid is a vital source of health insurance for many low-income Americans, as it covers 1 in 7 adults aged 19–64 years.[7] In addition, approximately 59% of Medicaid beneficiaries are Black or African American or another minority.[8] Few studies have examined CRC treatment costs borne by Medicaid. Many studies on the cost of CRC treatment have derived estimates relevant to individuals 65 years or older covered by Medicare.[9–12] Medicare costs, as they focus on treatments provided to older adults, may differ from Medicaid (or other insurance) costs for younger adults. Differences in CRC treatment have been reported between those insured by Medicaid versus Medicare.[13,14] Because CRC treatment varies by stage at diagnosis, information on treatment cost stratified by stage for Medicaid patients is important. Furthermore, given frequent discontinuity in Medicaid coverage among beneficiaries, it is important to understand the timing of Medicaid enrollment in relation to stage at diagnosis among enrollees.[15] In this study, we analyze data for Medicaid beneficiaries aged ≤64 years from 2 states to examine the prevalence of late-stage CRC diagnosis in this population and determine whether stage at diagnosis is associated with timing of Medicaid enrollment or stratified by sociodemographic characteristics, as well examining the costs of treating CRC by stage.

Methods

Data

We analyzed information about Medicaid beneficiaries living in California and Texas who were diagnosed with CRC during the years 2000–2009, between the ages of 21–64 years, and not dually eligible for Medicaid and Medicare. We selected the states of California and Texas because they had large cohorts of Medicaid beneficiaries and data were available. The institutional review board at RTI International, the California Health and Human Services Agency, and the Texas Department of State Health Services approved the research plan for this study.

To identify cases, California Cancer Registry (CCR) and Texas Cancer Registry (TCR) supplied identifiers in encrypted and password-protected files directly to the Centers for Medicare and Medicaid Services (CMS) for all those diagnosed with CRC from 2000 to 2009. CRC cases were identified with the following International Classification of Diseases for Oncology, second edition (ICD-O-2) codes: colon and rectum; colon excluding rectum, cecum (C180), appendix (C181), ascending colon (C182), hepatic flexure (C183), transverse colon (C184), splenic flexure (C185), descending colon (C186), sigmoid colon (C187), large intestine not otherwise specified (C188-C189, C260), rectum and rectosigmoid junction, rectosigmoid junction (C199), and rectum (C209). Due to delays in processing Medicaid claims data, this was the latest available information at the time of study initiation. CMS staff identified the cancer cohort for each state based on matches from the cancer registry data with the Medicaid Analytic eXtract (MAX) enrollment file. CMS sent RTI enrollment and claims files (personal summary, other therapy, long-term care, and prescription drug) for the matched patients and included a nonidentifiable patient identifier. RTI shared these files with CCR and TCR to obtain the relevant variables from the cancer registry database. CMS

also sent data from 2000–2010 on beneficiaries for each state that did not have cancer to select an appropriate comparison group.

Our analytic sample consisted of individuals aged 21–64 years who were enrolled in Medicaid in either California or Texas. Beneficiaries who enrolled 3 months or more after their diagnosis of CRC were excluded from the study as we could not determine whether these individuals were enrolled in other plans prior to joining Medicaid. These beneficiaries may have had medical costs in the first 3 months of diagnosis that we could not capture because they were paid for by sources other than Medicaid. We excluded beneficiaries who were 65 years or older and those who were enrolled in both Medicaid and Medicare (dual enrollees) as we did not have complete utilization data to verify whether they were receiving Medicare services prior to official enrollment in Medicaid. For beneficiaries enrolled in both Medicare and Medicaid, Medicare is the primary payer, and we would not have been able to capture those costs.

Stage of Diagnosis at Enrollment Analysis

The Medicaid enrollment file contained beneficiary eligibility information, demographic characteristics, and monthly enrollment. Our sample consisted of beneficiaries who were enrolled prior to their CRC diagnosis who enrolled during the month of diagnosis and up to 2 months after diagnosis. Those who were enrolled prior to diagnosis were categorized as *enrolled prior to diagnosis* and those who enrolled within 2 months were included in the *enrolled after diagnosis* group. We extended the time frame to up to 2 months as many individuals attempt to enroll at the time of diagnosis; the length of time varies by state for the administrative processes of determining eligibility and finalizing Medicaid enrollment.[16]

Our overall sample consisted of 8,154 CRC patients in California and 4,044 CRC patients in Texas. We presented the estimates separately for California and Texas. We analyzed demographic (age, sex, race/ethnicity) and clinical characteristics for patients enrolled in Medicaid before and after their cancer diagnosis. We reported race/ethnicity as non-Hispanic White, Hispanic (no specific race or multiple races), and Black or African American and other races/ethnicities combined. Black or African Americans made up about half of the latter group. Due to the small sample sizes of the groups of Black or African Americans and other races/ethnicities combined, we combined both groups. This allowed us to generate stable estimates, especially when examining specific time periods with smaller sample sizes. We ran logistic regressions to determine the probability of being diagnosed with late-stage disease. We defined *late- stage* as beneficiaries with cancer at regional or distant stage at diagnosis and compared with beneficiaries with cancer in in situ and localized stages as defined by Surveillance, Epidemiology, and End Results (SEER) Summary Stage.[17] We compared beneficiaries enrolled after diagnosis vs those enrolled before diagnosis and controlled for age, sex, and the 3 broad race/ethnicity categories. For all analyses, P values < .05 were considered statistically significant.

Cancer and Noncancer Cohort Cost Assessment

To estimate accurate costs, the cancer cohort was limited to beneficiaries who were continuously enrolled in fee-for-service Medicaid for 6 months after diagnosis. Because

this analysis focused on costs of CRC treatment, consistent with others, we also excluded beneficiaries who died within 6 months of diagnosis to avoid costs during end-of-life or terminal care.[18,19] We created a noncancer matched cohort to compare costs with cancer patients. The noncancer cohort was similar to the cancer cohort and consisted of beneficiaries enrolled in Medicaid from 2000–2009 under the age of 65 years who were not dually eligible for Medicare. Each CRC patient was matched on age (aged 21–44 years, aged 45–64 years) and sex. Racial/ethnic group (non-Hispanic White, Hispanic, Black or African American and other races/ethnicities combined) was also included in the matching process when feasible; we were able to consistently use racial/ethnic group for matching the Texas cohorts. In addition, we also ensured that the follow-up period selected for the comparison case was the same as the cancer case to ensure that seasonal differences in cost did not impact our cost estimates. To accomplish this, we assigned a pseudo diagnosis date for comparison cases that was the same month and year as that of the diagnosis date of the cancer patient and also ensured that a continuous period of 6 months of fee-for-service enrollment from pseudo diagnosis date was available for cost estimation.

We included 2,850 CRC cases and 2,850 matched noncancer cases from California and 1,824 CRC cases and 1,824 noncancer cases from Texas to estimate cost of cancer treatment in the 6-month period after diagnosis. For both the cancer and noncancer cohorts, we calculated the total Medicaid costs and incremental costs of covered services from physician and outpatient visits, hospitalizations, prescription drugs, home health care, and long-term care facilities using the payment variable from each of the files. Incremental costs were calculated by subtracting the 6-month costs of noncancer patients (matched by age group and sex) with the total 6-month Medicaid costs for CRC patients. All costs are presented in 2018 dollars; cost of services for each year were inflated to 2018 estimates using the gross domestic product deflator.[20]

Results

In Table 1, we compare demographic and clinical characteristics of patients enrolled prior to diagnosis and those enrolled after diagnosis. In California, all characteristics were statistically significantly associated with timing of enrollment. Patients enrolled prior to diagnosis were older than those enrolled after diagnosis (59.8 vs 53.4 years, respectively), and a higher percentage were female (52.9% vs 40.0%) and Hispanic (43.7% vs 33.9%). Patients enrolled prior to diagnosis were also diagnosed at an earlier stage: 35.7% of these patients were diagnosed at a localized stage or with in situ compared with 11.2% of patients enrolled after diagnosis. A higher percentage of patients enrolled after diagnosis, compared with patients enrolled prior to diagnosis, died within the first 6 months (19.4% vs 13.8%) and within the second 6 months after diagnosis (11.6% versus 6.8%).

Patients in Texas had similar characteristics. Patients enrolled before diagnosis compared with patients enrolled after diagnosis tended to be older (55.7 vs 51.4 years), female (56.4% vs 39.5%), and Hispanic (34.1% vs 30.7%). They were also diagnosed at an earlier stage; however, there was also a higher percentage of patients enrolled prior to diagnosis who had an unknown stage or were unstaged (12.6% vs 6.0%). A higher percentage of patients

enrolled after diagnosis died within the second 6 months (7–12 months) after diagnosis compared with patients enrolled prior to diagnosis (12.3% vs 8.7%).

We present the odds ratios of being diagnosed with late-stage CRC associated with year of diagnosis, enrollment before or after diagnosis, and demographics in Table 2. Age was a factor in late-stage diagnosis in California: overall from 2000–2009, Medicaid beneficiaries aged 40–49 years were 1.54 times higher odds of a late-stage CRC diagnosis compared with beneficiaries aged 60–64 years. California Medicaid beneficiaries aged 40–49 years showed similar trends in 2004–2006 and 2007–2009.

In California, patients diagnosed between 2000–2009 had 4.38-times higher odds of a late-stage CRC diagnosis if they enrolled after diagnosis than beforehand. The odds ratios increased from 3.67 for the group diagnosed in 2000–2003 to 5.50 for the group diagnosed in 2007–2009, although the confidence intervals overlapped, indicating that the increase may not be statistically significant. In Texas, patients diagnosed between 2000–2009 had 3.96-times higher odds of being diagnosed late if they enrolled-after diagnosis than before diagnosis. The odds ratios ranged from 3.78 for the group diagnosed in 2000–2003 to 4.52 for the group diagnosed in 2007–2009.

The total Medicaid per-person cost and incremental cancer treatment cost for the 6-month period after cancer diagnosis is shown by state and stage of diagnosis in Table 3. For both states, the total Medicaid cost increased by stage. In California, the total Medicaid per-person cost ranged from $32,024 at the localized stage to $47,832 for the distant stage. In Texas, the total Medicaid per-person cost ranged from $31,414 in the localized stage to $51,802 in the distant stage. The per-person incremental cancer treatment costs trended similarly as they increased with each stage. Per-person incremental costs ranged from $31,063 for localized stage to $47,161 for distant stage in California, and they ranged from $28,701 for localized stage to $49,634 for distant stage in Texas. Table 4 includes the descriptive characteristics of cancer patients and noncancer matches in California and Texas.

In Figure 1, we show the per-person incremental CRC treatment cost at 6 months by stage, type of service, and by state. In California, the per-person incremental treatment costs all increased as stage of diagnosis increased for ambulatory care services ($9,137 for local, $14,990 for regional, and $20,117 for distant), hospital stays ($17,498 for local, $20,794 for regional, and $23,052 for distant), and prescription drugs (ranged from $2,466 for local, $2,740 for regional, and $3,112 for distant). Only long-term care did not. Long-term care services decreased as stage of diagnosis increased: $1,962 per person at the local stage and $880 per person at the distant stage.

In Texas, the per-person incremental costs of treatment in ambulatory care services ($10,438 for local, $17,132 for regional, and $28,302 for distant stage) and hospital stays ($15,839 for local, $19,458 for regional and $20,139 for distant stage) increased as stage of diagnosis increased. Incremental cost of treatment decreased as stage increased for long-term care services: $1,550 in the local stage to $568 in the distant stage. There was no pattern with prescription drugs: $873 in the local stage, $585 in the regional stage, and $626 in the distant stage.

Discussion

Results from this study indicate that beneficiaries who were enrolled in Medicaid prior to diagnosis were more likely to be diagnosed at an earlier stage of CRC, whereas beneficiaries who enrolled after diagnosis were more likely to be diagnosed at a later stage. Beneficiaries may enroll in Medicaid after CRC diagnosis for a number of reasons. For example, a beneficiary might have been eligible for Medicaid but never enrolled in the program until after diagnosis.[21] In addition, beneficiaries could have qualified for Medicaid under medically needy programs after they spent down income and depleted assets that did not allow them to qualify for the program at an earlier time.[22] Our regressions showed that in both California and Texas, beneficiaries had nearly 4 times the odds of being diagnosed at a later stage of CRC if they were enrolled in Medicaid after diagnosis compared with before diagnosis. These results indicate that continuous Medicaid enrollment is associated with earlier stage at diagnosis. Although our study provides specific evidence for CRC, prior studies have identified a similar pattern for breast cancer.[23–25]

Medicaid beneficiaries are more likely to be diagnosed at a later stage compared with those with other types of insurance.[26,27] One reason may be that many Medicaid beneficiaries experience a lack of continuity in Medicaid coverage,[15] and this may be associated with a delayed diagnosis. Possible reasons for beneficiaries transitioning in and out of Medicaid (“churning”) include fluctuations in workplace insurance coverage or factors that may affect Medicaid eligibility, such as changes in income, residence, and family size, as well as administrative issues.[15,28] One study analyzing the Medical Expenditure Panel Survey (MEPS) from 2000–2004 found that 2 million adults lose Medicaid each year; within 6 months of losing Medicaid, 17% have reenrolled, 34% had other coverage, but 49% remained without coverage.[15] Additional studies were conducted to estimate potential changes in coverage and eligibility following passage of the Patient Protection and Affordable Care Act, and results indicated that churning (between Medicaid, health exchange plans, and no insurance) would continue.[29,30] Because the Medicaid population generally has lower use of screening compared with the general population,[31,32] this may be an additional reason why they are diagnosed with CRC at later stages. Further, results from one study of Medicaid beneficiaries in a managed care plan also indicated that Medicaid beneficiaries may not follow up with diagnostic colonoscopies after an abnormal screening.[33]

In 2010, the cost of CRC care was the second highest by type of cancer, second only to breast cancer. At that time, the cost of CRC care was estimated at $14.14 billion and was projected to increase to $17.4 billion in 2020, again second to breast cancer.[34] Our analyses showed that total costs and incremental costs increased as beneficiaries were diagnosed at later stages, thus impacting the cost of CRC care. We note that, in each state, the total and incremental costs were nearly the same at each stage. This indicates that the comparison group of noncancer patients incurred very low Medicaid costs, possibly indicating that this group may have been healthier and had fewer medical costs.

Our analyses also indicated long-term care costs decreased by stage of diagnosis. Medicaid long-term care costs in this study were likely related to comorbid conditions and other

underlying factors.[35] Beneficiaries with comorbid conditions may take longer to recover from cancer surgery and other treatments, and they incur higher costs likely due to complications.[36] Prescription costs were also generally lower as they were not a primary treatment option for CRC at the time of this study. Medicaid prescription costs in this study may reflect costs for treating chronic conditions as well as prescriptions to treat adverse effects and complications of cancer treatment.

There were limitations in the study. We defined beneficiaries "diagnosed at enrollment" as those beneficiaries who enrolled in Medicaid within 2 months of their month of diagnosis and, in doing so, we may have created a slightly less accurate period for analysis. Second, we excluded beneficiaries who did not remain enrolled 6 months after diagnosis, as we needed a continuously enrolled cohort to estimate cost. Treatments can take longer than 6 months, but many individuals unenroll from Medicaid after a limited period of enrollment.[15] Although the time frame does not affect the 6-month cost estimates of cancer treatment reported in this study, it does impact the total cost to the Medicaid program. Only beneficiaries enrolled in fee-for-service Medicaid were included in the analyses, as we did not have complete information for those enrolled in Medicaid managed care. It is possible that there may be differences between beneficiaries enrolled in fee-for-service vs managed care. Additionally, we did not have a sufficient sample size for some racial/ethnic groups to support analyses by more specific race/ethnicity categories. The results may have limited generalizability to other state Medicaid programs as only 2 states were included in the analyses.

Although we used the same observation period to compute the cost of cancer and noncancer patients, we were unable to incorporate information on preexisting comorbidities, as many beneficiaries enrolled in Medicaid after their diagnosis. Further, the data presented in this manuscript may not reflect current practice, and although costs are adjusted, they may be underestimated as costs may have increased at a higher rate than the adjustment. Lastly, because our focus was on treatment costs, we did not include end-of-life costs since these costs are significantly higher for cancer patients compared with noncancer patients,[37] and including these would have overestimated the net costs presented in this study.

Results from this study may have implications for the Medicaid program. As the study shows, treating CRC at later stages costs more than treating early stage disease. However, if CRC can be diagnosed early through CRC screening modalities, prognosis is better,[38] and, as suggested by study findings, costs are lower. The United States Preventive Services Taskforce recommends CRC screening for individuals aged 50–75 years.[38] Implementing evidence-based interventions to increase screening use, along with better understanding the reasons underlying differences in timing of enrollment, may help inform efforts to facilitate timely and continuous enrollment in Medicaid for those eligible and may lead to earlier stage at diagnosis, reduced costs, and improved outcomes for Medicaid beneficiaries.

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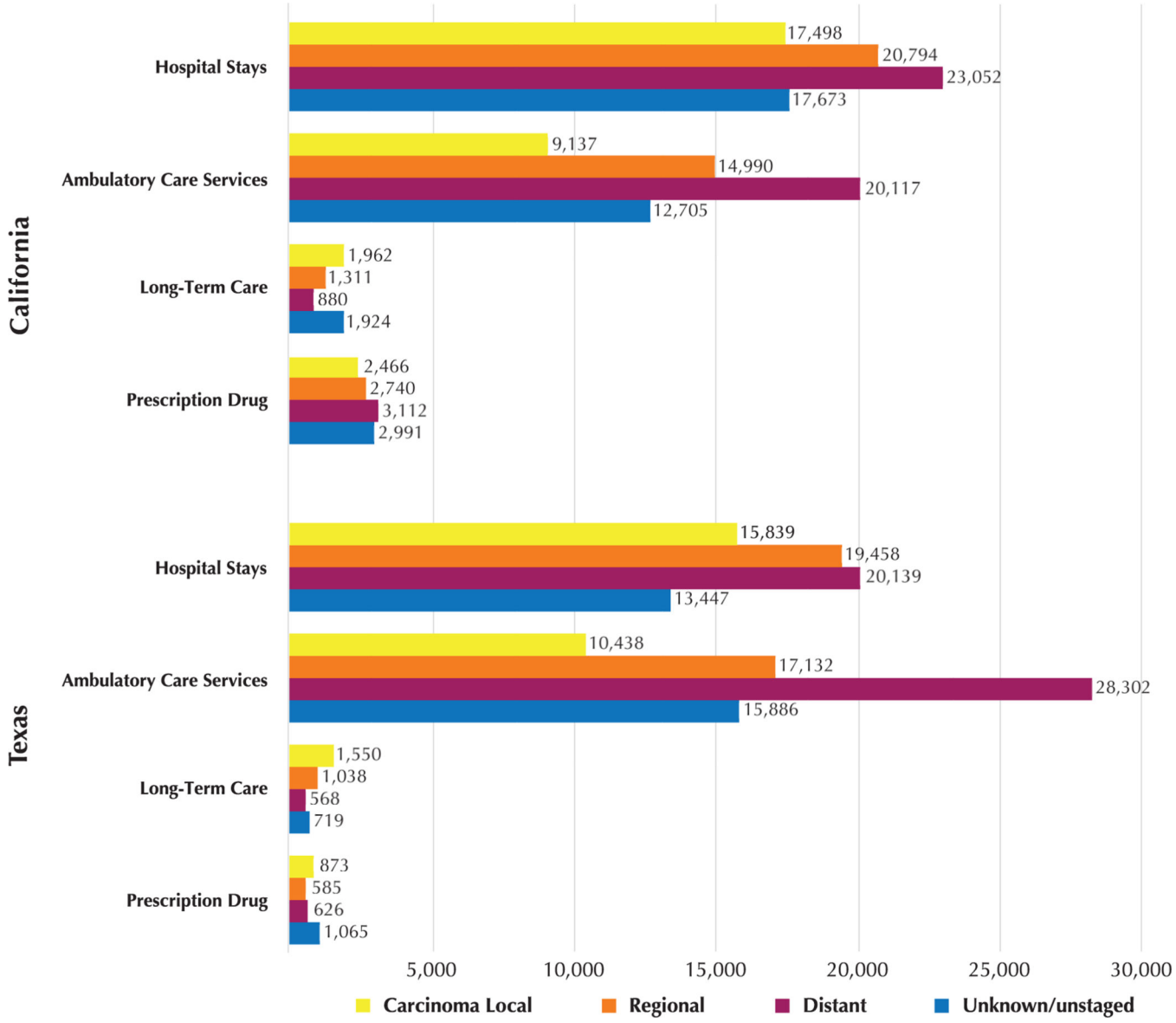

Figure 1.

Per-Person Incremental Colorectal Cancer Treatment Cost (2018 US Dollars) at 6 Months by Stage and Type of Service

Note: In situ cases were excluded as there were very few cases, and we were not able to report consistent or reliable estimates.

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Table 1.

Demographics and Clinical Characteristics of Medicaid Beneficiaries with Colorectal Cancer in California and Texas by Timing of Patient Enrollment in Medicaid

	California			***Texas***		
	Patients enrolled prior to diagnosis (n = 6,192)	**Patients enrolled after diagnosis (n = 1,962)**		**Patients enrolled prior to diagnosis (n = 2,166)**	**Patients enrolled after diagnosis (n = 1,878)**	
Age (mean y)	59.8	53.4	***	55.7	51.4	***
Sex (%)			***			***
Male	47.1	60.0		43.6	60.5	
Female	52.9	40.0		56.4	39.5	
Race/ethnicity (%)			***			*
Non-Hispanic White	33.7	37.0		35.6	35.2	
Hispanic	43.7	33.9		34.1	30.7	
Black or African American or other races/ ethnicities combined	22.6	29.2		30.3	34.1	
Stage at diagnosis (%)			***			***
In situ	4.3	0.4		2.9	0.5	
Localized	31.4	10.8		29.0	11.4	
Regional	35.3	32.1		32.8	31.6	
Distant	24.7	54.5		22.8	50.6	
Unknown/unstaged	4.2	2.3		12.6	6.0	
Time from diagnosis to death (%)						
Died 0–6 months	13.8	19.4	***	15.8	15.2	
Died 7–12 months	6.8	11.6	***	8.7	12.3	***

*** $P < .001$;

** $P < .01$;

* $P < .05$.

Statistical significance reported compares patients by timing of enrollment in Medicaid in each state.

Table 2.

Odds Ratios of Being Diagnosed with Late-Stage Colorectal Cancer for Medicaid Beneficiaries by Demographics and Timing of Enrollment

	2000–2009				*2000–2003*				*2004–2006*				*2007–2009*			
	California (n = 7,847)		**Texas (n = 3,658)**		**California (n = 2,354)**		**Texas (n = 1,236)**		**California (n = 2,444)**		**Texas (n = 1,124)**		**California (n = 3,049)**		**Texas (n = 1,298)**	
Sex																
Male	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Female	0.98		1.02		0.86		0.86		1.11		1.18		0.99		1.04	
	(0.89–1.08)		(0.87–1.20)		(0.72–1.03)		(0.65–1.14)		(0.93–1.33)		(0.89–1.58)		(0.85–1.16)		(0.80–1.35)	
Age of diagnosis (y)																
40–49	1.54	***	1.22		1.29		0.83		1.56	***	1.36		1.73	***	1.47	
	(1.31–1.80)		(0.96–1.56)		(0.99–1.70)		(0.53–1.29)		(1.18–2.07)		(0.88–2.12)		(1.33–2.26)		(0.98–2.21)	
50–59	1.1		1.09		0.92		0.78		1.31	***	1.32		1.06		1.15	
	(0.99–1.23)		(0.90–1.33)		(0.75–1.13)		(0.53–1.15)		(1.08–1.60)		(0.93–1.86)		(0.89–1.26)		(0.85–1.55)	
60–64	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Race/ethnicity																
Non-Hispanic White	1.00		1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Hispanic	0.9		0.83		0.71	***	0.74		0.93		0.88		1.06		0.91	
	(0.79–1.03)		(0.69–1.01)		(0.55–0.90)		(0.53–1.04)		(0.73–1.18)		(0.63–1.24)		(0.86–1.31)		(0.67–1.24)	
Black or African American or other races/ ethnicities combined	0.91		1.05		0.91		1.00		0.84		1.02		0.97		1.16	
	(0.81–1.02)		(0.86–1.27)		(0.74–1.12)		(0.71–1.41)		(0.68–1.04)		(0.72–1.45)		(0.80–1.16)		(0.85–1.58)	
Enrolled in Medicaid at time of diagnosis	4.38	***	3.96	***	3.67	***	3.78	***	4.19	***	3.45	***	5.50	***	4.52	***
	(3.76–5.11)		(3.33–4.71)		(2.84–4.74)		(2.81–5.08)		(3.18–5.54)		(2.52–4.71)		(4.20–7.22)		(3.35–6.08)	

*** $P < .0001$

Reference groups: female, age of diagnosis 60–64 years, White race/ethnicity, not enrolled in Medicaid.

Dependent variable = late-stage diagnosis

Sample is Medicaid beneficiaries diagnosed 2000–2009.

Confidence intervals are contained in parentheses.

Table 3.

Medicaid Total and Incremental 6-Month Fer-Person Cost of Colorectal Cancer Treatment by State and Stage at Diagnosis in 2018 US Dollars

	Total Medicaid cost [1]		***Incremental cancer treatment cost*** [2]	
	California	**Texas**	**California**	**Texas**
Stage at diagnosis				
Localized	32,024	31,414	31,063	28,701
	(29,207–34,841)	(28,905–33,922)	(28,208–33,919)	(26,157–31,244)
Regional	40,495	40,258	39,834	38,212
	(38,3 3 0–42,660)	(38,420–42,096)	(37,661 −42,008)	(36,355–40,091)
Distant	47,832	51,802	47,161	49,634
	(45,534–50,131)	(49,459–54,144)	(44,866–49,457)	(47,247–52,021)
Unknown/un staged	36,582	33,074	35,293	31,116
	(27,224–45,940)	(28,926–37,221)	(25,626–44,845)	(26,960–35,271)

[1]Total Medicaid cost includes all costs for the 6-month period from cancer diagnosis.

[2]Incremental cancer treatment cost includes total Medicaid cost for colorectal cancer patients minus cost of noncancer patients matched by age group and sex. We included 2,942 and 1,858 colorectal cancer patients from California and Texas, respectively, who were matched with noncancer patients. In situ cases were excluded as there were very few cases and we were not able to report consistent or reliable estimates.

Table 4.

Descriptive Characteristics of Cancer Patients and Noncancer Matches in California and Texas

	California			*Texas*	
	Cancer patients (n = 2,942)	**Noncancer matches (n = 2,942)**		**Cancer patients (n = 1,858)**	**Noncancer matches (n = 1,858)**
Age, y (%)					
21–39	6.22	6.22		11.14	11.14
40–64	93.78	93.78		88.86	88.86
Sex (%)					
Male	52.21	52.21		50.81	50.81
Female	47.79	47.79		49.19	49.19
Race/ethnicity (%)			***		
Non-Hispanic White	39.73	34.06		38.32	38.32
Hispanic	37.19	35.76		27.83	27.83
Black or African American or races/ethnicities combined	23.08	30.18		33.85	33.85

*** P < .001.