Original Contributions

Visit Duration for Outpatient Physician Office Visits Among Patients With Cancer

By Gery P. Guy Jr, PhD, MPH, and Lisa C. Richardson, MD, MPH

National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, GA

Abstract

Purpose: To examine the characteristics of patients with cancer and their visits to outpatient, office-based physicians; to analyze any differences between visits to oncologists and visits to other physicians; and to examine the effect of patient, practice, visit, and geographic characteristics on the length of time patients with cancer spend with physicians during office-based visits.

Methods: We examined a total of 2,470 patient office visits to nonfederally employed physicians from the 2006 and 2007 National Ambulatory Medical Care Survey. We performed descriptive analyses to examine the characteristics of patients with cancer by physician specialty. We conducted multivariate analyses using a generalized linear model to examine the relationship between visit duration and patient, practice, visit, and geographic characteristics.

Results: Forty-two percent of patients with cancer visited an oncologist. Females, females diagnosed with breast cancer, and individuals with advanced-stage cancer were more likely to visit an oncologist. Patients who visited oncologists were more likely to receive an anticancer drug, radiation therapy, and an increased number of diagnostic/screening services than those visiting other physicians. The mean duration of patient visits was 22.9 minutes. Higher percentages of performance-based compensation and capitation rates were associated with visits 4.4 minutes and 5.7 minutes shorter, respectively.

Conclusion: Higher use of performance-based payment mechanisms and capitated arrangements are associated with a decrease in the amount of time physicians spend with their patients with cancer. It is unclear whether shorter visit times impact the quality of medical care provided or whether physicians in these settings have become more proficient in caring for their patients.

Introduction

In 2007, more than 11 million Americans were living with cancer.[1] It is estimated that up to $207 billion will be spent on cancer care annually by 2020.[2] Given the high prevalence of cancer and the substantial resources devoted to its treatment, it is important to understand the characteristics of medical care use among patients with cancer. A recent study showed that, from 2002 to 2003, the overwhelming majority of patients with cancer (87%) visited physician offices; the remaining visited hospital clinics.[3]

Among the important characteristics of outpatient visits are the type of physicians seen and the length of time patients spend with their physicians. Many factors have been shown to affect outpatient visit duration, such as patient characteristics, practice characteristics, insurance coverage, and visit content.[4,5] The length of time a physician spends with a patient is strongly associated with physician productivity, which directly affects the number of patients seen per day and potentially affects practice revenue.[4]

There is a clear trade-off between physician productivity and the quality of care provided. Although reducing visit length can improve physician productivity, it also has the potential to reduce the quality of care provided. For example, shorter outpatient visits have been shown to be associated with decreased patient satisfaction and trust,[6-9] less attention to patients' psychosocial problems,[10] and a decrease in the provision of certain preventive health services.[11,12] In turn, low patient satisfaction has been associated with poor treatment adherence[13] and worse chronic disease outcomes.[14] These factors are especially important among those, such as patients with cancer, with health conditions requiring long-term treatment and follow-up.

In this study, we examine the characteristics of patients with cancer seen by outpatient office-based physicians. Specifically, we examine the characteristics of patients seen by oncologists compared with those seen by other physicians. Additionally, we analyze the effect of patient, practice, visit, and geographic characteristics on the length of time patients with cancer spend with physicians during outpatient visits.

Methods

Data

We analyzed data from the 2006 and 2007 National Ambulatory Medical Care Survey (NAMCS). The NAMCS is a national probability sample survey of visits to nonfederal office-based physicians conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics. The survey uses a multistage probability design involving samples of geographic primary sampling units, physician practices within primary sampling units, and patient visits within physician practices. Physicians were identified from the master files of the American Medical Association and the American Osteopathic Association. In 2006 and 2007, the NAMCS oversampled oncologists. Sampled physicians were asked to complete patient record forms for a systematic random sample of approximately 30 office visits during a randomly assigned 1-week period.[17,18]

In 2006, 64% of eligible physicians agreed to participate and 65% participated in 2007, resulting in 3,023 physicians report-

Published by American Society of Clinical Oncology and Managed Care & Healthcare Communications, LLC

ing on 62,170 visits.[17,18] In 2006 and 2007, response rates among oncologists were 45% and 56%, respectively, resulting in 120 oncologists reporting on 2,734 visits.[17,18] To study the characteristics of outpatient visits for cancer, we limited the analysis to all office visits with the primary diagnosis of cancer, coded according to the International Classification of Diseases, ninth revision, clinical modification (ICD-9-CM). Cancer type was categorized as follows: larynx/lung (ICD-9-CM, 161-162), female breast (174), prostate (185), colon/rectum (153,154), leukemia/lymphoma (200-208), melanoma (172), and other malignancies. Primary diagnoses of nonmelanoma skin cancer were excluded (ICD-9-CM, 173).[19] Whereas there were 2,559 eligible visits, 89 visits (3.5%) were excluded from our analyses because the patients did not have face-to-face contact with the physicians.

Measures

For each visit included in the NAMCS, the physician, a staff member, or a US Census Bureau field representative recorded information on patient characteristics, practice characteristics, visit content, and geographic characteristics. The NAMCS contains data on patient demographics, health insurance, physician specialty, reason for the visit, cancer site and stage, medications ordered or provided, diagnostic/screening services ordered or provided, physician compensation mechanisms, and geographic characteristics. The key variable of interest in our analysis is the time spent with the physician, a continuous variable measuring the face-to-face interaction time in minutes between the physician and patient. Time spent waiting for the physician or seeing other health care providers are not included in the measure of visit duration.

We conceptualized that the duration of a visit is a function of patient characteristics, practice characteristics, visit characteristics, and geographic characteristics. Patient characteristics include age, sex, race/ethnicity, type of health insurance, whether the patient was new to the physician, whether the patient was referred, the presence of other chronic conditions, and cancer type and stage. Practice characteristics include physician specialty and practice ownership status. Several measures of physician compensation are also included—whether productivity, patient satisfaction, quality of care, or practice profiling is taken into account when determining patient-care compensation. Additionally, the percentage of patient-care revenue on the basis of bonuses, returned withholds, or other performance-based payments and the percentage of revenue from capitation were examined. Visit characteristics include the reason for the visit, number of diagnostic/screening services ordered or provided, number of health education services ordered or provided, whether radiation therapy was ordered or provided, whether an anticancer medication (antineoplastics) was administered or ordered, and visit disposition. Geographic characteristics include whether the physician practices in a standard metropolitan statistical area, region of the practice location (East, Northeast, Midwest, or West), and socioeconomic indicators (percent poverty and percent of adults with a bachelor's degree or higher) at the patient zip code level.

Statistical Analysis

Descriptive analyses were performed to examine the distribution of patients by cancer type and physician specialty. Additionally, descriptive analyses were performed to examine patient characteristics, practice characteristics, visit characteristics, and geographic characteristics stratified by the oncology specialty. We conducted a bivariate analysis to examine the differences between patients seen by oncologists and those seen by other physicians. Categorical variables were analyzed using Pearson's χ^2 test, whereas continuous variables were tested by using analysis of variance.

To examine the factors influencing duration of visits by patients with cancer, we first examined the mean and SEs of visit duration across various characteristics. The relationship between visit duration and these characteristics was then modeled, controlling for patient, practice, visit, and geographic characteristics. Multivariate analyses were performed by using a generalized linear model with a gamma distribution and a log link to account for the skewness of the visit duration variable. The marginal effects of each of the explanatory variables on the dependent variable are reported and can be interpreted as the change in minutes associated with each explanatory variable, independent of the other variables.

To examine the sensitivity of our findings to the specification of our dependent variable, we also analyzed our data using a multivariate logistic regression model with a dependent variable indicating whether visit duration was longer than 30 minutes. Overall, results of this analysis closely resemble the results from the generalized linear model, which suggests that the findings are not sensitive to the specification of the dependent variable. All analyses were conducted using survey data commands in Stata version 11.2. Patient characteristics were examined using patient weights, whereas visit length was examined using visit weights.[20]

Results

In 2006 and 2007, NAMCS sampled data on 2,470 office visits for cancer, representing a total of 10.7 million patients. Table 1 presents the distribution of patients by cancer type and physician specialty. Overall, 41.9% of patients were seen by oncologists, 15.0% by urologists, 7.2% by hematologists, 3.8% by dermatologists, 10.8% by general surgeons, and 9.8% by primary care providers. The majority of patients with female breast (60.1%), colorectal (54.5%), and lymphoma/leukemia (55.9%) cancer were seen by oncologists, whereas patients with prostate cancer were primarily seen by urologists (69.7%) and patients with melanoma were primarily seen by dermatologists (64.7%).

Table 2 presents patient, practice, visit content, and geographic characteristics of patients stratified by those visiting oncologists and those seeing other physicians. Patients visiting oncologists were more likely to be female. Patients with advanced-stage cancer were more likely to be seen by an oncologist, whereas those with an unknown stage were more likely to be seen by other physicians. Higher levels of patient satisfaction and quality measures were found among patients seen by oncologists relative to those seen by other physicians. Patients'

Table 1. Distribution of Patient Visits by Type of Cancer and Provider Type, 2006-2007

	Cancer Type (%)							
Physician Specialty	All (n = 2,470)	Lung/Larynx (n = 238)	Female Breast (n = 558)	Prostate (n = 421)	Colorectal (n = 276)	Lymphoma/Leukemia (n = 317)	Melanoma (n = 61)	Other Cancers (n = 599)
Oncology	41.9	35.3	60.1	13.7	54.5	55.9	28.6*	39.3
Urology	15.0	0.0	0.0	69.7	0.0	0.0	0.0	13.9
Hematology	7.2*	9.2*	10.0*	2.2*	5.4*	15.5*	0.0	5.4*
Dermatology	3.8	0.0	0.0	0.0	1.2*	1.0*	64.7	4.8*
General surgery	10.8	2.7*	17.4	0.0	26.7*	8.6*	6.7*	11.6*
Primary care	9.8	10.7*	12.1*	9.0	8.8*	10.0*	0.0	9.7
Other	11.4	42.0	0.4*	5.4*	3.3*	8.9*	0.0	15.2

NOTE. Visits were considered cancer related if the principal diagnosis was coded as a malignant neoplasm (ICD-9-CM, 140-208). Nonmelanoma skin cancer is excluded. Oncology specialty includes gynecologic oncology, hematology/oncology, musculoskeletal oncology, medical oncology, pediatric hematology/oncology, surgical oncology.
Abbreviation: ICD-9-CM, International Classification of Diseases, ninth revision, clinical modification.
* Estimates based on fewer than 30 observations and/or with a relative SE > 0.30 are considered unreliable by the standards of the National Center for Health Statistics.

reasons for visits varied; those visiting oncologists were more likely to cite cancer and chemotherapy as the reason for the visit, whereas those visiting other physicians were more likely to report symptoms. Physicians ' reasons for seeing patients also varied; patients visiting oncologists were more likely to visit for a routine chronic problem, whereas patients seeing other physicians were more likely to visit for pre- or postsurgical care and preventive care. Patients visiting oncologists were more likely to be administered or ordered/supplied anticancer therapy, ordered/prescribed radiation therapy, and receive more diagnostic/screening services than those visiting other physicians. Patients visiting oncologists were more likely to be seen in a metropolitan statistical area than patients visiting other physicians.

Table 3 presents the unadjusted mean duration of visits and the marginal effects from the multivariate analysis presented in minutes. The mean duration of ambulatory visits for cancer from 2006 to 2007 was 22.9 minutes (SE, 0.5 minutes). Patient age, sex, and race/ethnicity were not associated with the length of time spent with physicians. Visits by those with other insurance were 3.7 minutes shorter than whose with private health insurance ($P < .001$). Visits among new patients were 8.1 minutes longer than those by established patients ($P < .001$). No significant differences in visit time were found among the six major cancer types or by cancer stage.

Although the average time spent with physicians was longer among oncologists (24.7 minutes), the difference was not significant in the multivariate model. Visits to physician-owned offices were 2.9 minutes shorter than visits to non–physician-owned facilities ($P = .044$). Visits to physicians for whom more than 25% of their total practice care revenue was performance-based were 4.4 minutes shorter than practices with lower rates of performance-based compensation ($P < .001$). Additionally, visits in settings with more than 25% of patient-care revenues from capitation were 5.7 minutes shorter than practices with lower rates of capitation ($P = .003$).

The physician's reason for the visit significantly impacted visit length. Pre- or postsurgical visits were 4.6 minutes shorter than visits for new problems ($P < .001$). Visits in which anticancer therapy drugs were administered or ordered/supplied were not significantly longer. However, visits in which radiation therapy was ordered or provided were 5.5 minutes longer ($P = .013$). Visits in the Midwest were 5.1 minutes shorter than visits in the Northeast ($P < .001$).

Discussion

In this study, we examined the characteristics of patients with cancer, specifically, the types of physicians seen and the time spent with physicians. We found that 41.9% of patients with cancer visited oncologists in this cross-sectional study. Similar to previous findings, we found that females, females diagnosed with breast cancer, and individuals with advanced-stage cancer were more likely to visit an oncologist.[22] As expected, patients visiting oncologists were more likely to receive an anticancer drug, radiation therapy, and an increased number of diagnostic/screening services. Consistent with previous literature, the majority of patients with prostate cancer were seen by urologists, whereas patients with melanoma were seen by dermatologists.[3,22]

Our results indicate that the length of time physicians spend with their patients varies across patient, practice, visit, and geographic characteristics. Specifically, physician reimbursement mechanisms affected visit duration, given that higher rates of performance-based compensation and capitation were associated with shorter visit times. The content of patient visits was also associated with visit duration; new patients and those receiving more diagnostic/screening services and/or radiation therapy had longer visit times. Visit duration differed by geographic region, with patients in the Midwest experiencing shorter visits.

Our results indicate that the mere presence of performance-based measures in patient care compensation were not associated with visit time. However, an increased percentage of revenue tied to such measures was associated with shorter visit time. Physicians in settings with increased performance-based payment measures may have incentives to increase patient volume to meet productivity goals and thus aim to get patients in and out more quickly. In this study, we also found evidence that physicians with increased capitation rates spend less time with their patients, a finding supported in the literature.[23] Similarly, at an individual level, physicians have been shown to spend less

Published by American Society of Clinical Oncology and Managed Care & Healthcare Communications, LLC

Table 2. Patient, Practice, Visit Content, and Geographic Characteristics by Physician Specialty, 2006-2007

	Oncologists			Other Physicians			
		Weighted Distribution			Weighted Distribution		
Characteristic	No.	%	SE	No.	%	SE	*P*
Patient characteristic							
Age, years							.120
< 50	229	13.8	1.2	97	12.6	2.1	
50-64	523	32.9	1.7	256	30.5	2.9	
65-74	420	27.1	1.8	230	28.5	3.7	
≥ 75	406	26.2	1.7	309	28.5	3.5	
Sex							< .001
F	992	60.4	2.2	301	44.9	3.2	
M	586	39.6	2.2	591	55.1	3.2	
Race/ethnicity							.092
Non-Hispanic white	1,244	80.2	2.6	718	80.3	2.6	
Non-Hispanic black	178	11.1	2.0	90	6.5	1.1	
Non-Hispanic other	40	1.9	0.4	27	2.9*	1.2	
Hispanic	116	6.7	1.6	57	10.3	2.2	
Health insurance							.435
Private	645	39.9	2.8	334	39.5	4.3	
Medicare	711	44.3	2.5	448	47.0	3.9	
Medicaid	108	6.7	1.1	54	7.2	2.0	
Uninsured	34	2.4	0.6	12	3.2*	1.5	
Other	80	6.7	2.2	44	3.2	0.8	
New patient	114	24.7	2.6	70	26.1	3.2	.739
Cancer type							< .001
Lung/larynx	178	10.4	1.1	60	13.7	2.7	
Female breast	450	30.2	2.1	108	14.5	2.7	
Prostate	65	5.3	1.1	356	24.1	2.9	
Colorectal	219	12.7	1.7	57	7.6	1.9	
Lymphoma/leukemia	264	14.4	1.6	53	8.2	1.8	
Melanoma	36	2.5*	0.8	25	4.5*	1.4	
Other	366	24.6	2.0	233	27.4	2.8	
Stage (excludes leukemia)							.001
In situ	110	7.7	2.3	63	6.2	1.5	
Local	364	25.3	3.0	265	27.0	2.9	
Regional	216	14.3	2.5	64	6.2	1.1	
Distant	266	14.1	2.1	38	5.0*	2.0	
Unknown	542	38.6	5.3	453	55.8	3.5	
No. of other chronic conditions	1,578	0.8†	0.1	892	0.9†	0.1	.678
Practice characteristic							
Physician owned	1,354	82.7	4.5	795	85.4	3.9	.645
Compensation							
Patient satisfaction	266	18.2	4.6	78	7.7	2.0	.007
Physician productivity	565	37.1	7.1	229	25.5	5.2	.161
Quality	298	19.1	4.6	98	10.3	2.6	.046
Practice profiling	79	6.0*	2.8	61	7.5*	3.4	.721
> 25% revenue performance-based	51	4.6*	2.4	92	5.1*	2.2	.861
> 25% capitation	27	4.1*	2.8	25	6.0*	2.1	.602

(continued on next page)

Table 2. Patient, Practice, Visit Content, and Geographic Characteristics by Physician Specialty, 2006-2007 (continued)

Characteristic	Oncologists			Other Physicians			P
	No.	Weighted Distribution %	SE	No.	Weighted Distribution %	SE	
Visit content characteristic							
Referred to the physician	521	47.5	5.0	255	39.0	3.8	.159
Patient reason for visit							.001
Symptoms	190	12.6	2.5	166	26.0	3.4	
Cancer	553	37.7	5.4	297	25.7	4.0	
Chemotherapy/injections	183	8.1	2.2	31	1.8*	0.6	
Tests, examinations, medications	190	11.5	2.7	127	14.2	1.9	
Pre-/postoperative follow-up	342	18.0	2.9	202	18.7	3.2	
Other	120	12.1	2.2	69	13.6	3.2	
Provider's reason for visit							< .001
New problem	178	23.2	2.7	137	26.0	3.3	
Chronic problem							
Routine	1,191	62.4	3.2	464	39.2	3.5	
Flare-up	107	6.1	1.3	52	6.7	1.7	
Before/after surgery	34	4.6*	1.5	165	16.6	2.8	
Preventive care	29	1.8*	0.5	52	8.8	2.6	
Unknown	39	1.9*	0.9	22	2.7*	1.3	
Anticancer drug	709	39.8	3.8	178	16.5	3.0	< .001
Radiation therapy	87	6.6	1.4	23	1.4*	0.5	< .001
Diagnostic/screening services	1,578	5.4†	0.2	892	4.0†	0.3	< .001
Health education services	1,578	0.4†	0.1	892	0.4†	0.1	.289
Referred to another physician	97	10.0	1.4	104	15.7	2.8	.034
Geographic characteristic							
MSA	1,441	91.6	3.5	754	78.9	10.1	.007
Region							.827
Northeast	307	21.0	3.8	197	18.3	3.9	
Midwest	377	22.5	4.8	181	19.4	4.3	
South	577	37.9	5.5	357	44.7	7.6	
West	317	18.6	4.6	157	17.5	4.1	
Socioeconomic indicators, %							
Poverty (lowest quartile)	176	8.2	1.7	107	13.4	3.2	.168
Bachelor's degree or higher education (lowest quartile)	310	18.7	2.8	175	18.6	2.2	.977

Abbreviation: MSA, metropolitan statistical area.
* Estimates based on fewer than 30 observations and/or with a relative SE > 0.30 are considered unreliable by the standards of the National Center for Health Statistics.
† Represents the mean of a continuous variable, not a percentage.

time with capitated patients than with noncapitated patients.[5,24,25] Among patients with cancer, visit times in nonprepaid settings significantly increased between 1989 and 1998, whereas no such increase was found in prepaid settings.[5] These compensation mechanisms may increase the incentive for physicians to be more productive with their time, thus reducing the time spent with their patients. What is unclear is whether the shorter visit times have an impact on the quality of medical care provided or whether physicians in these settings have become more proficient in providing services. Given that capitiation payments reward physicians for having healthier patients, they may place more of an emphasis on health promotion activities. For example, a positive association between use of preventive care and shorter visit times has been shown among capitated patients.[25]

Our study is subject to certain limitations that may affect the interpretation of our results. First, the generalizability of our results may be limited, given that the NAMCS response rate was approximately 65% in our study years, and federally employed physicians were excluded. However, we believe this is not a problem, because sample weights were applied to account for these factors. Second, the ability to adequately control for and examine cancer stage was limited as a result of the large number of patients with unknown stage. Third, we were unable to examine differences across subpopulations,

Published by American Society of Clinical Oncology and Managed Care & Healthcare Communications, LLC

Table 3. Mean Duration of Visits and Multivariate Generalized Linear Model Regression Analysis of the Association Between Patient Visit Duration and Patient, Practice, Visit Content, and Geographic Characteristics

	Time		Marginal Effect	
Variable	**Minutes**	**SE**	**Minutes**	**SE**
All patients	22.9	0.5		
Patient characteristic				
Age, years				
< 50	24.8	1.5	Reference	
50-64	23.8	0.8	−0.3	1.2
65-74	21.7	0.9	−1.1	1.7
≥ 75	22.0	0.6	−0.0	1.6
Sex				
F	23.9	0.6	1.5	0.8
M	21.7	0.6	Reference	
Race/ethnicity				
Non-Hispanic white	23.0	0.5	Reference	
Non-Hispanic black	22.1	1.2	−0.1	0.9
Hispanic	23.0	1.8	−1.2	1.4
Other race	21.4	1.8	−2.1	1.3
Insurance				
Private insurance	24.4	0.8	Reference	
Medicare	21.7	0.6	−1.3	1.1
Medicaid	22.9	1.3	−0.6	1.3
Uninsured	23.0	2.1	−1.7	1.7
Other insurance	21.7	2.1	−3.7*	1.0
Patient status				
Established patient	22.3	0.5	Reference	
New patient	30.2	1.9	8.1*	1.9
Cancer type				
Lung/larynx	21.6	1.2	Reference	
Female breast	23.6	1.0	0.7	1.3
Prostate	19.5	0.7	0.1	1.3
Colorectal	22.2	1.7	−0.8	1.3
Lymphoma/leukemia	21.9	1.0	0.3	1.1
Melanoma	18.7	1.9	−2.7	2.0
Other cancer	26.1	0.9	4.8*	1.2
Cancer stage				
In situ	23.8	2.0	Reference	
Local	23.2	1.0	−2.1	1.9
Regional	25.4	1.5	−0.8	2.2
Distant	25.1	1.5	−1.6	2.0
Unknown	21.5	0.6	−3.0	1.9
No. of chronic conditions			−0.6	0.3
Provider characteristic				
Physician specialty				
Nononcology provider	21.1	0.5	Reference	
Oncology	24.7	0.9	1.6	1.1
Physician owned	22.2	0.5	−2.9†	1.4
Compensation				
Patient satisfaction	24.5	2.3	2.0	3.3
Physician productivity	23.6	1.3	0.8	1.1
Quality	24.0	2.0	0.1	2.9
Practice profiling	21.5	2.7	−2.6	2.2
> 25% revenue performance-based	18.3	0.6	−4.4*	1.2
> 25% capitation	20.1	2.1	−5.7*	1.9
Visit characteristic				
Referred to the physician	24.3	0.8	0.0	1.0
Patient reason for visit				
Symptoms	22.6	1.3	Reference	
Cancer	23.9	0.9	1.7	1.2
Chemotherapy/injections	21.5	1.6	−0.9	1.2
Pre-/postoperative follow-up	21.5	1.1	0.8	1.3
Tests, examinations, medications	23.1	1.5	1.8	1.7
Other	23.7	1.3	1.0	1.2
Provider reason for visit				
New problem	26.0	1.5	Reference	
Chronic condition				
Routine	22.6	0.5	−0.4	1.3
Flare-up	26.8	1.8	2.7	1.6
Before/after surgery	19.2	0.8	−4.6*	1.3
Preventive care	20.1		−3.4	2.2
Anticancer drug	23.6	1.0	0.2	0.7
Radiation therapy	28.6	2.6	5.5†	2.2
No. of diagnostic/screening services			0.3	0.2
No. of health education services			1.3	0.8
Referred to another physician	24.2	1.3	0.4	1.1
Geographic characteristic				
MSA	23.3	0.6	0.3	1.1
Region				
Northeast	24.8	1.0	Reference	
Midwest	20.0	0.7	−5.1*	1.2
South	25.2	1.0	−1.4	1.2
West	22.2	0.8	0.1	1.1
Socioeconomic indicator, %				
Poverty (lowest quartile)	21.9	1.3	−0.4	1.2
Bachelor's degree or higher education (lowest quartile)	21.0	1.0	−1.2	1.0

(continued in next column)

Abbreviation: MSA, metropolitan statistical area.
* Significant at $P < .01$.
† Significant at $P < .05$.

such as by cancer site, as a result of small sample sizes. Lastly, we were unable to examine the time spent with nonphysician staff members. However, we found that visit time with physicians did not vary among patients also seen by nonphysician staff members.

This study also has several important strengths. The NAMCS provides nationally representative data describing outpatient visits for patients with cancer in the United States, allowing for population-based estimates of patients with cancer and their visit characteristics. Our analysis encompasses more than 5 million patients with cancer per year from 2006 to 2007. The data from the NAMCS is abstracted from the patient's medical record, likely resulting in more accurate and complete information than self-reported data. This study also contributes to the literature by specifically examining visit duration among patients with cancer, as well as a comparison between patients seen by oncologists and other physicians.

Given the high prevalence of cancer, the significant amount of resources devoted to its treatment, and the predominate use of care in the outpatient office setting, it is vitally important to understand the characteristics and content of care provided to patients with cancer in physician offices. This study found that physician payment mechanisms, specifically increased use of performance-based compensation and capitation are associated with the length of time spent in face-to-face interaction between patients with cancer and physicians. As the literature has shown, visit duration may have important implications for the quality of care provided. This analysis suggests that physicians respond to financial incentives to some degree, whether by providing more efficient care, cutting back on unnecessary procedures, or providing less comprehensive care. To ensure that physicians are not varying clinical care according to the nature or structure of payment, quality improvement projects could include the examination of visit time by factors such as payment type. With an expected influx of newly insured patients as a result of coverage expansions under the Affordable Care Act, physicians may face increased productivity pressures. It is important to continue to monitor the impact of these changes as well as the effect of physician reimbursement mechanisms on the care provided to patients with cancer.

Accepted for publication on December 16, 2011.

Acknowledgment

The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Authors' Disclosures of Potential Conflicts of Interest

The authors indicated no potential conflicts of interest.

Author Contributions

Conception and design: All authors

Collection and assembly of data: Gery P. Guy Jr

Data analysis and interpretation: All authors

Manuscript writing: All authors

Final approval of manuscript: All authors

Corresponding author: Gery P. Guy Jr, PhD, MPH, Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, 4770 Buford Highway, NE, MS K-55, Atlanta, GA 30341; e-mail: lrm2@cdc.gov.

DOI: 10.1200/JOP.2011.000493

References

1. Centers for Disease Control and Prevention (CDC): Cancer survivors: United States, 2007. MMMWR Morb Mortal Wkly Rep 60:269-272, 2011

2. Mariotto AB, Yabroff KR, Shao Y, et al: Projections of the cost of cancer care in the United States: 2010-2020. J Natl Cancer Inst 103:117-128, 2011

3. Richardson LC, Tangka FK: Ambulatory care for cancer in the United States: Results from two national surveys comparing visits to physicians' offices and hospital outpatient departments. J Natl Med Assoc 99:1350-1358, 2007

4. Blumenthal D, Causino N, Chang YC, et al: The duration of ambulatory visits to physicians. J Fam Pract 48:264-271, 1999

5. Mechanic D, McAlpine DD, Rosenthal M: Are patients' office visits with physicians getting shorter? N Engl J Med 344:198-204, 2001

6. Lin CT, Albertson GA, Schilling LM, et al: Is patients' perception of time spent with the physician a determinant of ambulatory patient satisfaction? Arch Intern Med 161:1437-1442, 2001

7. Gross DA, Zyzanski SJ, Borawski EA, et al: Patient satisfaction with time spent with their physician. J Fam Pract 133-137, 1998

8. Morrell DC, Evans ME, Morris RW, et al: The "five minute" consultation: Effect of time constraint on clinical content and patient satisfaction. BMJ 292:870-873, 1986

9. Fiscella K, Meldrum S, Franks P, et al: Patient trust: Is it related to patient-centered behavior of primary care physicians? Med Care 42:1049-1055, 2004

10. Howie JG, Porter AM, Forbes JF: Quality and the use of time in general practice: Widening the discussion. BMJ 298:1008-1010, 1989

11. Streja DA, Rabkin SW: Factors associated with implementation of preventive care measures in patients with diabetes mellitus. Arch Intern Med 159:294-302, 1999

12. Nowalk MP, Bardella IJ, Zimmerman RK, et al: The physician's office: Can it influence adult immunization rates? Am J Manag Care 10:13-19, 2004

13. Morisky DE, Ang A, Krousel-Wood M, et al: Predictive validity of a medication adherence measure in an outpatient setting. J Clin Hypertens (Greenwich) 10: 348-354, 2008

14. Kaplan SH, Greenfield S, Ware JE Jr: Assessing the effects of physician-patient interactions on the outcomes of chronic disease. Med Care 27:S110-S127, 1989 (suppl)

15. Reference deleted

16. Reference deleted

17. Hsiao CJ, Cherry DK, Beatty PC, et al: National Ambulatory Medical Care Survey: 2007 summary. Natl Health Stat Rep 27:1-32, 2010

18. Cherry DK, Hing E, Woodwell DA, et al: National Ambulatory Medical Care Survey: 2006 summary. Natl Health Stat Rep 3:1-39, 2008

19. Public Health Service and Health Care Financing Administration: The International Classification of Diseases, Ninth Revision: Clinical Modification (ed 6). Washington, DC, Public Health Service, 1998

20. Burt CW, Hing E: Making patient-level estimates from medical encounter records using a multiplicity estimator. Stat Med 26:1762-1774, 2007

21. Reference deleted

22. Pollack LA, Adamache W, Ryerson AB, et al: Care of long-term cancer survivors: Physicians seen by Medicare enrollees surviving longer than 5 years. Cancer 115:5284-5295, 2009

23. Glied S, Zivin JG: How do doctors behave when some (but not all) of their patients are in managed care? J Health Econ 21:337-353, 2002

24. Melichar L: The effect of reimbursement on medical decision making: Do physicians alter treatment in response to a managed care incentive? J Health Econ 28:902-907, 2009

25. Balkrishnan R, Hall MA, Mehrabi D, et al: Capitation payment, length of visit, and preventive services: Evidence from a national sample of outpatient physicians. Am J Manag Care 8:332-340, 2002

Published by American Society of Clinical Oncology and Managed Care & Healthcare Communications, LLC