HEALTH CARE REFORM

Primary Care Visit Duration and Quality

Does Good Care Take Longer?

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Background: It is unclear if increasing pressure on primary care physicians to be more efficient has affected visit duration or quality of care. We sought to describe changes in the duration of adult primary care visits and in the quality of care provided during these visits and to determine whether quality of care is associated with visit duration.

Methods: We conducted a retrospective analysis of visits by adults 18 years or older to a nationally representative sample of office-based primary care physicians in the United States.

Results: Between 1997 and 2005, US adult primary care visits to physicians increased from 273 million to 338 million annually, or 10% on a per capita basis. The mean visit duration increased from 18.0 to 20.8 minutes ($P<.001$ for trend). Visit duration increased by 3.4 minutes for general medical examinations and for the 3 most common primary diagnoses of diabetes mellitus (4.2 minutes, $P=.002$ for trend), essential hypertension (3.7 minutes, $P<.001$ for trend), and arthropathies (5.9 minutes, $P<.001$ for trend). Comparing the early period (1997-2001) with the late period (2002-2005), quality of care improved for 1 of 3 counseling or screening indicators and for 4 of 6 medication indicators. Providing appropriate counseling or screening generally took 2.6 to 4.2 minutes. Providing appropriate medication therapy was not associated with longer visit duration.

Conclusions: Adult primary care visit frequency, quality, and duration increased between 1997 and 2005. Modest relationships were noted between visit duration and quality of care. Providing counseling or screening required additional physician time, but ensuring that patients were taking appropriate medications seemed to be independent of visit duration.

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TWO OF THE MOST PRESSING goals for the US health care system are to deliver higher-quality care and to lower costs.[1] Primary care physicians (through care provided during ambulatory care visits) have been charged with meeting both of these goals even as their patient population has grown older and more complex. Furthermore, after adjusting for inflation, net income for primary care physicians dropped by 10.2% between 1995 and 2003.[2] Given the reimbursement environment and the pressures to improve efficiency, one might worry that primary care physicians would respond by spending less time with each patient to see more patients, improve their efficiency, and boost their incomes. Such practices could potentially adversely affect the quality of care provided.

Past work suggests that significant investments of primary care physician time may be required to deliver high-quality care. Results of previous studies suggest that it would take at least 7.4 to 10.6 hours per workday to deliver recommended care to a typical panel of primary care patients[3,4] and that greater patient satisfaction is associated with perceived and actual visit duration.[5,6] Other investigators have shown that a poor provider relationship may lead to greater medication nonadherence,[7] which is likely to require provider time to remedy. Together, findings from these studies raise questions about whether efforts to improve efficiency might have a detrimental effect on quality of care at the visit level.

At the visit level nationwide, we know little about whether primary care physicians are spending more or less time with patients than they were in the past and about whether visits that provide evidence-based care take more time. Therefore, we sought to answer the following 3 questions: (1) Has the duration of adult primary care office visits in the United States decreased over the last decade? (2) Which patient or physician characteristics are as-

sociated with shorter or longer office visits? (3) Is visit duration associated with the quality of care provided during ambulatory care visits to primary care physicians in the United States?

METHODS

We used the National Ambulatory Medical Care Survey (NAMCS), a US representative survey administered by the National Center for Health Statistics. We supplemented these data with population estimates from the US Census Bureau.[8,9] The NAMCS uses a 3-stage sampling design to collect information on visits to non–federally funded office-based physicians throughout the United States. The sampling is based on geographic location, physician practices by specialty in specified geographic regions, and visits within individual physician practices. The National Center for Health Statistics weights each visit to account for (1) probability of selection, (2) nonresponders, (3) number of physicians in each specialty, and (4) extreme values. The weighting permits extrapolation to national estimates.

Patient, physician, and clinical information is recorded by participating physicians, office staff, or US Census Bureau representatives. Clinical characteristics include the following: (1) up to 3 reasons for the visit (coded using the reason-for-visit classification), (2) 3 diagnoses coded using the *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*), and (3) since 2003 up to 8 drugs (≤6 drugs for 1995-2002) coded using a unique National Center for Health Statistics–assigned 5-digit code. These include prescription and over-the-counter drugs, and they must be ordered, supplied, administered, or continued during the visit. Duration of the office visit is reported by physicians, office staff, or US Census Bureau representatives and is defined as the time spent by the patient with the physician. A complete description of the visit duration variable is included in an appendix that is available from the author.

STUDY POPULATION

We excluded visits by patients younger than 18 years and visits that did not include time with a provider (5% of all adult visits to primary care providers). We included only visits to general practitioners, family practitioners, or general internists. We created a 9-year sample beginning in 2005 and included the previous 8 years of NAMCS data. We chose this period because it was the length of time for which survey questions about practice ownership and size remained unchanged.

QUALITY MEASURES

We identified visits that were eligible for at least 1 of 9 validated quality indicators used in previous studies[10,11] evaluating NAMCS data. The indicators were placed into 2 categories, namely, medication quality indicators and counseling or screening quality indicators. A complete list of the quality indicators, their eligibility criteria, and clinical actions that allow the indicators to be met[10,11] are available in an appendix from the corresponding author.

STATISTICAL ANALYSIS

We calculated the per capita number of adult primary care visits using adult primary care visits as the numerator and using annual US Census population estimates for adults as the denominator. We next examined trends in office visit duration for general medical examination (GME) visits and for all visits from December 30, 1996, through December 25, 2005, using simple linear regression analysis. General medical examination visits were defined as visits with the following: (1) *ICD-9-CM* code V70.0X or V70.9X (or both), (2) reason-for-visit classification code 31000, or (3) a preventive or non–illness care code as the NAMCS major reason for the visit. As we were concerned that visit duration might have changed over time because of the changing composition of visits, we also chose the 4 most common primary diagnoses for all adult office visits and examined visit duration for these individual conditions over time. The 4 conditions were essential hypertension (*ICD-9-CM* code 401), diabetes mellitus (*ICD-9-CM* code 250), spinal disorders (*ICD-9-CM* codes 720-724), and arthropathies and related disorders (*ICD-9-CM* codes 710-719).

To examine whether certain patient or physician characteristics were associated with longer visit duration, we pooled visits across all 9 years of the study period. We used bivariate techniques and multiple linear regression analysis to estimate patient, practice, and physician characteristics associated with visit duration. Our primary outcome was visit duration. Covariates in the multivariate model included patient factors such as sex, new patient (yes or no), visit type (GME or other), insurance (Medicare, private insurance, or other), age (18-35, 36-49, 50-64, 65-75, or ≥76 years), and race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, or other). We also included physician factors such as whether the visit was to a general practitioner or family practitioner or to a general internist, whether the physician practiced solo or was part of a group practice, what US Census region the visit occurred in (Northeast, Midwest, South, or West), whether the metropolitan area of the visit was urban or rural, and whether the practice was physician owned or not. Finally, we included visit year as an indicator variable.

Because of the heterogeneous reasons for the office visits and the high likelihood that the underlying reasons varied by the characteristics enumerated in the previous paragraph, we also examined just GME visits. We built multiple linear regression models and adjusted for each of the characteristics (except whether the visit was for a GME visit or not) to identify independent predictors of longer GME visits.

We next pooled quality performance into 2 periods representing similar total numbers of visits, namely, the early period (1997-2001) and the late period (2002-2005). We used χ^2 tests to determine whether quality of care changed over time.

Finally, to test our hypothesis that providing high-quality care should take more time, we examined the relationship between quality of care and visit duration using bivariate techniques. We then built multiple linear regression models (1 for each quality indicator) in which meeting the quality indicator (yes or no) was the primary predictor and visit duration was the outcome. We included all covariates from the characteristics enumerated, but we modeled age as a continuous predictor and did not include GME visit as a predictor for counseling or screening models. Although we hypothesized that age, sex, race/ethnicity, and new patient status might interact with quality indicator performance, we found little evidence to support these hypotheses. Therefore, we excluded interaction terms in our final models. To account for the probability of a type I error due to multiple testing, we used a Bonferroni-corrected *P* value (.05/*n*, where *n* indicates 9 quality indicators) to test for significance.

All analyses were performed using commercially available software (SAS version 9.1.3; SAS Institute Inc, Cary, North Carolina; and SAS-callable SUDAAN version 10.0.0; Research Triangle Institute, Research Triangle Park, North Carolina). All *P* values were 2-tailed, and $P < .05$ was considered statistically significant (except in the case of multiple comparisons, in which $P < .0056$ was considered statistically significant).

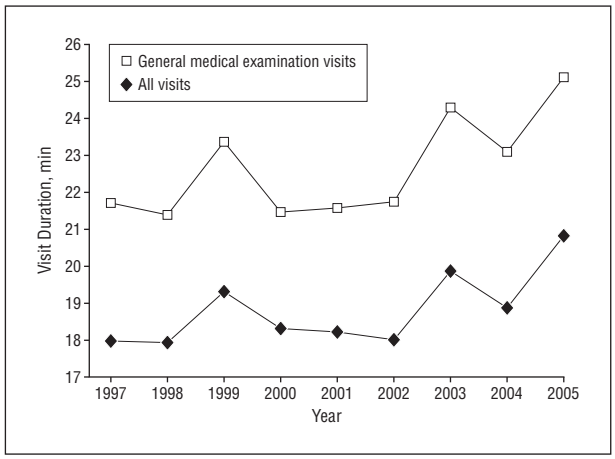

Figure 1. Adult primary care visit duration (1997-2005). For all visits, $P<.001$ for trend. For general medical examination visits, $P=.02$ for trend.

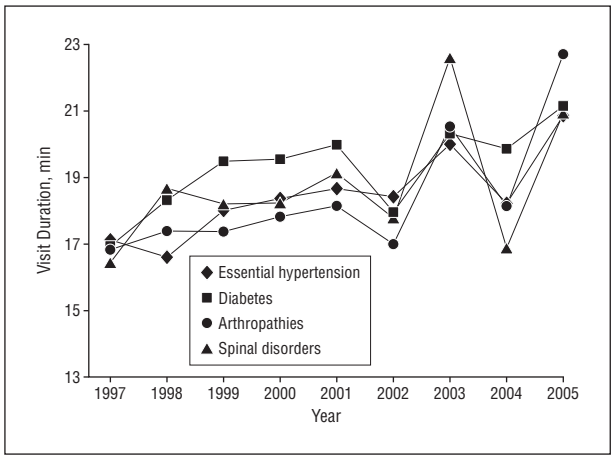

Figure 2. Visit duration for 4 common primary diagnoses (1997-2005). *P* values for trend were $P=.002$ for diabetes, $P<.001$ for essential hypertension, $P<.001$ for arthropathies, and $P=.05$ for spinal disorders. Arthropathies include most visits for joint discomfort such as those for gout, osteoarthritis, and rheumatoid arthritis. Spinal disorders primarily include visits for low back pain.

RESULTS

After excluding visits without physician contact, there were 46 250 adult visits to primary care physicians in the NAMCS database, representing a total of 2.6 billion primary care visits in the United States between 1997 and 2005. The number of annual visits increased from 273 million visits in 1997 to 338 million visits in 2005. Between 1997 and 2005, per capita adult primary care visits increased from 1.4 to 1.5 visits per year. Over the 9-year period, the mean visit duration was 18.9 minutes, and the median visit duration was 15 minutes. Overall sample variability was modest (available in the appendix from the author).

Between 1997 and 2005, the mean duration of an adult primary care visit increased by 16% (**Figure 1**) from 18.0 to 20.8 minutes ($P<.001$ for trend). Visit duration increased comparably across age groups (available in the appendix from the author). The duration of GME visits increased from 21.7 to 25.1 minutes ($P=.02$ for trend). Visits also lengthened for patients with the 3 most common primary diagnoses of diabetes mellitus (4.2 minutes, $P=.002$ for trend), essential hypertension (3.7 minutes, $P<.001$ for trend), and arthropathies (5.9 minutes, $P<.002$ for trend) (**Figure 2**). However, there was substantial variation across years.

Patients seen by general internists had visits that were 1.7 minutes longer than those of patients seen by general practitioners or family practitioners (**Table 1**). Older patients, new patients, and those in certain regions of the country also had longer visits. Non-Hispanic blacks and Hispanics spent less time with primary care physicians, although this difference reached statistical significance only for GME visits ($P=.01$) (**Table 2**).

Between 1997 and 2005, there were improvements in the proportion of eligible visits meeting 4 of 6 medication quality indicators and meeting 1 of 3 counseling or screening quality indicators (**Figure 3**). Results were similar when adjusting for differences in demographic characteristics (sex, age, and race/ethnicity) between the 2 periods (early period vs late period). Even in 2002 through 2005, rates of adherence to simple quality metrics were low, with performance below 70% on 7 of 9 measures. Estimates of annual changes in quality indicator performance are available in the appendix from the author.

One of 6 medication quality indicators and all 3 counseling or screening quality indicators were associated with longer visits (**Table 3**). Appropriately prescribing a β-blocker or diuretic for hypertension was associated with a visit that was 0.7 minutes longer ($P=.03$), but this did not meet the Bonferroni-corrected threshold of significance ($P<.0056$). Visits that met any of 3 counseling or screening quality indicators were 2.6 to 4.2 minutes longer than eligible visits in which patients did not receive these services ($P<.001$ for all).

COMMENT

We found no evidence that primary care physicians, despite decreasing income and increasing pressures for greater efficiency, have responded by shortening the time they spend with their patients. In fact, primary care physicians spent 16% more time during a typical office visit in 2005 compared with 1997. Not surprisingly, older patients or those making their first visit spent more time with the physician. In contrast, primary care physicians spent less time with patients of racial/ethnic minority groups, especially during GME visits. Although quality of care increased concomitantly during this period, we found little evidence that longer visits were associated with better care for medication quality indicators. However, primary care visits in which physicians provided appropriate counseling or screening took longer than visits in which they did not.

It may be surprising that primary care physicians are spending more time with patients. Although it is possible that physicians have become less efficient over time, it is far more likely that visit duration has increased because it takes more resources or time to care for an older and sicker population.[12-14] We found that the fraction of older patients increased during this period. However,

Table 1. Characteristics Associated With Primary Care Visit Duration, 1997-2005

Characteristic[a]	Adjusted Duration, min[b]	Difference (SE), min[c]	*P* Value Difference
Sex			.93
Female (n = 174)	18.3	0.0 (0.1)	
Male (n = 121)	18.4	1 [Reference]	
Age, y			<.001
18-35 (n = 54)	16.7	–1.6 (0.3)	
36-49 (n = 72)	17.5	–0.9 (0.3)	
50-64 (n = 76)	18.1	–0.2 (0.3)	
65-75 (n = 50)	17.9	–0.4 (0.2)	
≥76 (n = 43)	18.4	1 [Reference]	
Race/ethnicity			.09
Other (n = 12)	17.3	–1.1 (0.8)	
Hispanic (n = 23)	17.4	–1.0 (0.5)	
Non-Hispanic black (n = 28)	17.8	–0.5 (0.3)	
Non-Hispanic white (n = 231)	18.4	1 [Reference]	
Insurance			.18
Other (n = 58)	18.0	–0.4 (0.3)	
Medicare (n = 77)	18.5	0.1 (0.3)	
Private insurance (n = 160)	18.4	1 [Reference]	
New patient			<.001
Yes (n = 25)	22.0	3.6 (0.4)	
No (n = 269)	18.4	1 [Reference]	
Visit type			<.001
General medical examination (n = 49)	22.8	4.4 (0.4)	
Other (n = 245)	18.4	1 [Reference]	
Physician specialty			<.001
General or family practitioner (n = 165)	16.6	–1.7 (0.3)	
General internist (n = 130)	18.4	1 [Reference]	
Metropolitan area			.37
Rural (n = 60)	18.0	–0.3 (0.4)	
Urban (n = 235)	18.4	1 [Reference]	
Region			.03
Northeast (n = 58)	18.8	0.5 (0.5)	
Midwest (n = 73)	17.9	–0.5 (0.4)	
West (n = 64)	19.1	0.7 (0.5)	
South (n = 100)	18.4	1 [Reference]	
Physician ownership			.95
No (n = 60)	18.4	0.0 (0.3)	
Yes (n = 234)	18.4	1 [Reference]	
Practice size			.02
Solo (n = 112)	19.2	0.82 (0.4)	
Other (n = 183)	18.4	1 [Reference]	

[a] The n represents annual visits in millions. Due to rounding, values may not total n values.

[b] Adjusted for year (indicator variable), sex, age, race/ethnicity, insurance, new patient status, visit type, physician specialty, metropolitan area, region, physician ownership, and practice size. Reference was 1997, male, 76 years or older, non-Hispanic white, not a new patient, general internist, private insurance, not solo practice, not a general medical examination, urban, South, and physician owned.

[c] The difference equals the adjusted visit duration of the reference group minus the adjusted visit duration of the comparator group.

Table 2. Characteristics Associated With General Medical Examination (GME) Visit Duration, 1997-2005

Characteristic[a]	Adjusted Duration, min[b]	Difference (SE), min[c]	*P* Value Difference
Sex			.37
Female (n = 28)	24.7	–0.4 (0.4)	
Male (n = 21)	25.0	1 [Reference]	
Age, y			.01
18-35 (n = 10)	25.0	0.0 (0.9)	
36-49 (n = 11)	26.6	1.6 (0.9)	
50-64 (n = 14)	26.6	1.6 (0.8)	
65-75 (n = 8)	26.8	1.8 (0.7)	
≥76 (n = 6)	25.0	1 [Reference]	
Race/ethnicity			.01
Other (n = 2)	22.7	–2.4 (1.4)	
Hispanic (n = 4)	23.3	–1.8 (0.9)	
Non-Hispanic black (n = 5)	23.1	–1.9 (0.8)	
Non-Hispanic white (n = 39)	25.0	1 [Reference]	
Insurance			<.001
Other (n = 10)	22.1	–2.9 (0.6)	
Medicare (n = 12)	23.1	–1.9 (0.7)	
Private insurance (n = 27)	25.0	1 [Reference]	
New patient			.001
Yes (n = 6)	27.2	2.2 (0.7)	
No (n = 43)	25.0	1 [Reference]	
Physician specialty			<.001
General or family practitioner (n = 27)	22.1	–3.0 (0.7)	
General internist (n = 22)	25.0	1 [Reference]	
Metropolitan area			.60
Rural (n = 10)	25.5	0.5 (0.9)	
Urban (n = 40)	25.0	1 [Reference]	
Region			.33
Northeast (n = 10)	24.6	–0.5 (1.3)	
Midwest (n = 12)	23.5	–1.6 (1.0)	
West (n = 11)	24.8	–0.2 (1.1)	
South (n = 15)	25.0	1 [Reference]	
Physician ownership			.14
No (n = 10)	24.1	–1.0 (0.7)	
Yes (n = 39)	25.0	1 [Reference]	
Practice size			.07
Solo (n = 18)	23.8	–1.3 (0.7)	
Other (n = 32)	25.0	1 [Reference]	

[a] The n represents annual visits in millions. Due to rounding, values may not total n values.

[b] Adjusted for year (indicator variable), sex, age, race/ethnicity, insurance, new patient status, visit type, physician specialty, metropolitan area, region, physician ownership, and practice size. Reference was 1997, male, 76 years or older, non-Hispanic white, not a new patient, general internist, private insurance, not solo practice, not a general medical examination, urban, South, and physician owned.

[c] The difference equals the adjusted visit duration of the reference group minus the adjusted visit duration of the comparator group.

when we adjusted for changes in demographics, primary care physicians still spent more time with their patients in 2005 than they did in 1997. Other factors such as complexity of illness or a growing emphasis on patient participation in clinical decision making[15-17] might have contributed to these increases.

We expected to find that certain factors such as older age or new patient status would be associated with longer visits. However, we were surprised to find that physicians spent less time with black and Hispanic patients than they did with white patients, at least during GME visits. Despite the limitations of our data set to better understand the factors associated with racial/ethnic differences, our findings may explain why patients of minority groups do not always receive care that is comparable to that provided to white patients.[18] Further work to delineate why these differences exist would be helpful.

We found only modest improvements overall in the quality of care that Americans received over this period.

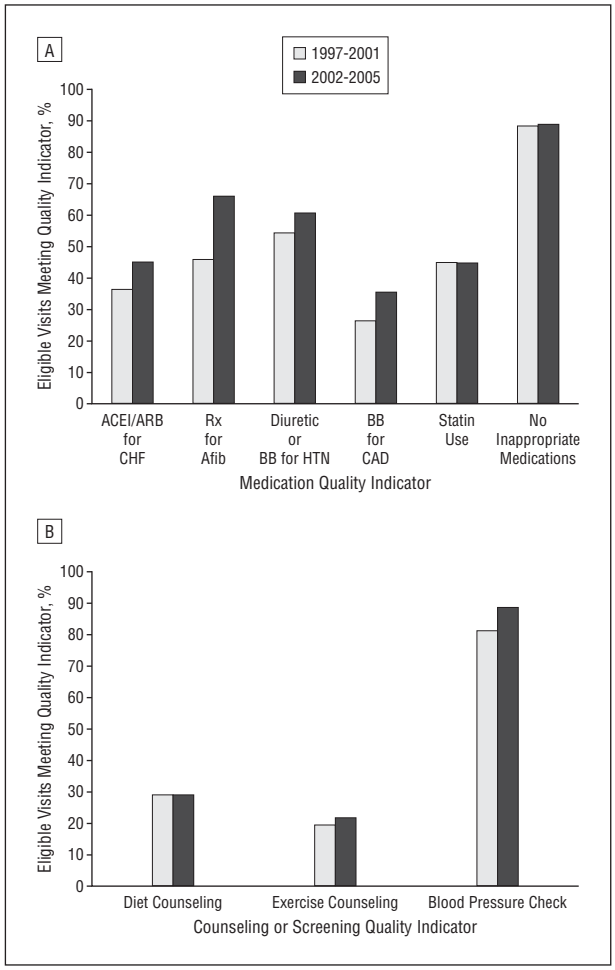

Figure 3. Comparison of the early period (1997-2001) vs the late period (2002-2005). A, Change in medication quality indicator performance over time. $P>.05$ for all medication indicators except angiotensin-converting enzyme inhibitor or angiotensin receptor blocker for congestive heart failure (ACEI/ARB for CHF) ($P=.04$), treatment for atrial fibrillation (Rx for Afib) ($P=.002$), β-blocker (BB) or diuretic for hypertension (HTN) ($P<.001$), and BB for coronary artery disease (CAD) ($P=.006$). B, Change in counseling or screening quality indicator performance over time. $P>.05$ for all counseling or screening quality indicators except blood pressure check ($P<.001$).

Our findings are consistent with those seen in the *National Healthcare Quality Report* and other national examinations of quality of care.[19] Furthermore, we found no improvements in rates of diet and exercise counseling during the study period, despite evidence of the benefits of these interventions among high-risk patients. Accelerating the pace of improvement may require changes in the way care is provided, including the implementation of systems such as electronic health records with robust clinical decision support,[20] although the adoption of such systems has been slow[21] and evidence is mixed on whether such systems save physician time.[22-24]

Our findings suggest that the relationship between quality of care and physician visit duration depends on the type of quality indicator being measured, namely, medication quality indicators vs counseling or screening quality indicators. In general, our results support the notion that ensuring that patients are prescribed the appropriate medications need not take more time than allowing their continued use of the wrong medication or ignoring key conditions altogether. Not surprisingly, however, we found a clear and consistent relationship between visit duration and provision of counseling and screening–based care. Providing higher-quality preventive care may require greater reimbursement to account for the additional time spent, for more routine use of alternative strategies such as combining efforts of physician and nonphysician caregivers to maximize the effect of advice,[25] or for the use of Internet-based behavioral counseling and education to modify behavior.[26]

Although other investigators have examined visit duration trends[27] in earlier periods and changes in quality of care,[10] we are unaware of other studies that have examined how these 2 pieces fit together for multiple quality indicators in the ambulatory setting. Mechanic et al[27] found that primary care visit duration increased between 1989 and 1998, and Blumenthal et al[12] found that certain characteristics such as age and number of diagnostic tests were associated with longer visits. Ma and Stafford[10] created ambulatory quality indicators using NAMCS data and focused on trends in quality of care through 2002. Our work analyzes more recent data and examines the relationship between the quality of provided care and the time taken to provide that care. In addition, although prior work has documented that it takes time to provide recommended[28] and effective[25,29,30] counseling, we examined a much broader set of measures through a more contemporary period and linked quality of care to recorded visit duration in a nationally representative data set.

Our study has several limitations. Duration of the outpatient visit was not directly observed but was self-reported by physicians, office staff, or NAMCS field staff. Although a study[31] found that physicians may overestimate the face-to-face time they spend with patients, other factors such as the time physicians spend on other patient-related work may explain some of the gap.[32] Moreover, other investigators have used the NAMCS data to examine national trends in visit duration,[27] and they found that trends in the NAMCS data mirror those in other data sources. Finally, there is no evidence that overestimation of visit duration, if any, has worsened over time. Another limitation is that NAMCS data may inadequately capture patients' complexity and the severity of their illnesses. In sensitivity analyses, we adjusted our results for the number of diagnoses and the number of quality indicators for which patients were eligible and found that our results were qualitatively similar. In addition, our quality measures were limited given that these are visit-based survey data. For example, reporting of over-the-counter medications may be underreported, potentially leading to an underestimate of performance on the quality indicator of antithrombotic treatment for atrial fibrillation (given that aspirin is an effective therapy that may not be captured by NAMCS data). However, these measures have been previously validated[10] and used,[11] and the visits are representative of the care that Americans receive in the ambulatory setting. Finally, we were unable to adjust for 3 factors that might affect our estimates of the association between quality of care and visit duration. First, past work has found that NAMCS data underreport behavioral counseling[31]; such visit misclassification would lead to an underestimate of the associa-

Table 3. Visit Frequency and Duration by Quality Indicators for Eligible Visits, 1997-2005

Quality Indicator[a]	Eligible Visits Meeting Quality Indicator, %	Visit Duration, min			*P* Value
		Quality Indicator Is Met	Quality Indicator Is Not Met	Adjusted Difference (95% Confidence Interval)[b]	
Medication					
ACEI/ARB for CHF (n = 716 [N = 5])	40	21.8	21.9	0.0 (–2.0 to 2.1)	.97
Treatment for atrial fibrillation (n = 389 [N = 2])	55	20.8	21.1	–0.3 (–2.7 to 2.2)	.81
Diuretic or β-blocker for hypertension (n = 4588 [N = 30])	58	19.6	18.6	0.7 (0.1 to 1.4)	.03
β-Blocker for coronary artery disease (n = 1537 [N = 10])	30	20.6	20.7	0.2 (–1.2 to 1.5)	.80
Statin for hyperlipidemia (n = 3582 [N = 23])	45	20.1	20.4	–0.2 (–1.2 to 0.7)	.63
No inappropriate medications (n = 11 445 [N = 75])	88	19.3	19.4	–0.4 (–1.1 to 0.4)	.34
Counseling or Screening in General Medical Examination Visits					
Diet counseling (n = 2565 [N = 17])	29	24.1	21.4	2.6 (1.3 to 4.0)	<.001
Exercise counseling (n = 2565 [N = 17])	20	25.7	21.3	4.2 (2.3 to 6.0)	<.001
Blood pressure check (n = 7635 [N = 49])	84	23.2	19.8	2.7 (1.5 to 3.8)	<.001

Abbreviation: ACEI/ARB for CHF, angiotensin-converting enzyme inhibitor or angiotensin receptor blocker for congestive heart failure.
[a] The n represents eligible visit records sampled; and N, total eligible annual visits in millions.
[b] Adjusted for sex, age (continuous), race/ethnicity, new patient status, physician specialty, insurance, region, practice size, general medical examination vs not (only for medication quality indicators), year (indicator variable), physician ownership, and metropolitan area. Difference is calculated as the visit duration if a quality indicator is met minus the visit duration if a quality indicator is not met.

tion between visit duration and performance on counseling or screening quality indicators. Second, the most difficult patients tend to take more time than the average patient,[33] and preventive care may get overlooked during these visits. We could not adjust for such patient factors, again potentially biasing our results toward an underestimate of the time that it takes to provide high-quality care. Third, we did not have information about the strength of the patient-physician relationship, potentially leading to an underestimate of the amount of time that it takes to deliver counseling or screening, as familiarity between a patient and physician may increase the likelihood of meeting quality indicators and may shorten the mean visit duration.

In summary, there was a surprising scarcity of recent data on how much time primary care physicians spend with their patients and how this has changed over time. In our study, we found no evidence for the commonly held belief that physicians are spending less time with their patients or that quality of care has diminished. In fact, patients spent more time with their primary care physicians during office visits in 2005 than they did almost a decade earlier, and overall they received better care. On average, older patients, patients of white race/ethnicity, and patients who visited general internists spent more time with their physicians than younger patients, patients of racial/ethnic minority groups, and patients who visited general practitioners or family practitioners. Overall performance on clinical quality metrics was poor. Better performance on medication quality measures did not seem to require extra physician time, while better performance on counseling or screening indicators was associated with longer visit duration. Improvements in quality of care will likely require a combination of investments in systems such as electronic health records, greater use of other professionals such as nurse practitioners, and better reimbursement to primary care physicians for the extra time spent.

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Author Contributions: Dr Chen had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. *Study concept and design:* Chen and Jha. *Acquisition of data:* Chen and Farwell. *Drafting of the manuscript:* Chen and Jha. *Critical revision of the manuscript for important intellectual content:* Chen, Farwell, and Jha. *Statistical analysis:* Chen, Farwell, and Jha. *Study supervision:* Jha.
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