

THE INTENSITY OF PHYSICIANS' WORK IN PATIENT VISITS

Implications for the Coding of Patient Evaluation and Management Services

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ABSTRACT

Background Clinicians use visit codes to bill for services involving the evaluation of patients and the management of their care. The existing guidelines for coding and documenting these services, as well as proposed revisions, have been criticized as complex, clinically irrelevant, and costly. We investigated whether easily measured characteristics of physician-patient visits accurately reflect differences in the amount of work performed. Such characteristics might provide the basis for a simple and equitable physician-payment scheme.

Methods We collected information about the amount of physicians' work, the time spent in encounters with patients, and characteristics of patients and visits for 19,143 physician-patient visits in the practices of 339 urologists, rheumatologists, and general internists. Physicians recorded the actual time involved in evaluating the patient and managing his or her care during each visit and estimated the work involved in relation to a standardized, hypothetical visit. We used multivariate linear regression to identify factors related to differences in the total amount of work and to calculate work and work intensity (work per minute) for different types of visits.

Results The duration of the face-to-face encounter with the patient or family (encounter time) was strongly predictive of the total amount of work. Total work, however, did not increase in direct proportion to encounter time. Visits with shorter encounter times were more intense than longer ones, in part because the work involved in providing fixed services, such as review of records and entry of information, did not vary in direct proportion to the length of the face-to-face encounter. Work intensity was greater for new patients than for established patients, for patients referred by other physicians than for those who were not, and for patients with new rather than previously existing problems.

Conclusions A simple coding scheme based on time spent by the physician in the face-to-face encounter and a limited set of characteristics of the visit would accurately reflect total work in actual practice. A fee structure based on these factors and the inverse relation between work per minute and encounter time would provide equitable payment while encouraging efficiency and discouraging "up-coding" of services. (N Engl J Med 1999;341:337-41.)

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CLINICIANS use *Current Procedural Terminology*¹ visit codes to bill Medicare and other payers for services involving the evaluation of patients and the management of their care. The existing *Current Procedural Terminology* guidelines for coding visits and for documenting evaluation and management services have been criticized as being overly complex, clinically irrelevant, and costly to implement; the revisions to these guidelines proposed by the Health Care Financing Administration (HCFA) have met with similar criticism.²⁻⁴ The guidelines have also been assailed as an unnecessary and misguided attempt to ensure fair compensation for physicians and to limit fraud and abuse in billing.^{2,3}

The *Current Procedural Terminology* guidelines are a response to legislation passed in 1989, in which Congress required that the Medicare program replace its charge-based system of paying physicians with a fee schedule that reflected the resources used in providing services to patients. Under this fee schedule, payment for each service was to be based on three factors: the work performed by the physician, the costs of practice, and the costs of malpractice insurance. As a basis for such a fee schedule, the legislation called on HCFA to establish a coding structure for evaluation and management services that would accurately reflect differences in physicians' work.⁴

We report the results of a survey of physicians conducted by the Physician Payment Review Commission in 1989 to identify the correlates of physicians' work as observed in actual practice.⁵ Although the study was conducted 10 years ago, the data are relevant to the current debate. The results suggest the basis for a new scheme for coding evaluation and management services that would accurately reflect differences in work, would be simple for physicians to use, would eliminate the complexities and ambi-

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guidelines of the current and proposed guidelines, and would incorporate incentives for efficient practice.

METHODS

Study Sample

We collected information about the amount of physicians' work, the duration of encounters with patients, and selected characteristics of the patients and the visits for 19,143 visits with patients among 399 urologists, rheumatologists, and general internists. Participating physicians were board-certified or board-eligible in one of the three specialties and spent at least 36 hours per week in direct patient care.

A sample of eligible physicians from each specialty was initially identified with use of the American Medical Association's Physician Masterfile. Telephone interviews were conducted with the selected physicians until we identified 180 to 185 eligible physicians in each specialty who agreed to participate in the study. Sixty-nine percent of the selected rheumatologists and 58 percent of the selected internists and urologists completed the survey, for a total of 399 respondents. The characteristics of physicians who completed the survey were similar to those of all eligible physicians.⁵

Survey Methods

Physicians and their staff members used specially designed forms to record information for an average of 57 consecutive visits with patients in the office or the hospital. Visits to patients in the intensive care unit, in the emergency department, in a nursing home, or at home and visits in which only nonphysician practitioners provided care were not included.

For each visit, the study participants recorded the following seven characteristics: the patient's age, the category of patient (new or established), the type of care (initial or follow-up), the site of the service (office or hospital), whether the patient had been referred by another physician (consultative visit) or not (non-consultative visit), the type of problem (new or previously known to the physician), and whether the patient had cognitive or physical impairment (patients were classified as having impairment if they could not follow simple instructions, were easily confused, had difficulty remembering, or habitually needed help with eating, using the toilet, bathing, or getting out of a bed or chair).

Using clipboards with attached digital watches, participants recorded actual starting and stopping times for any of the following seven categories of evaluation and management services performed by the physician on the day of the visit: reviewing records, taking a history and performing a physical examination, counseling the patient and family members, entering information on the chart or dictating, making contact with other providers, making clinical contact with house staff, and scheduling tests and obtaining test results. The participants also estimated the amount of time they spent providing related evaluation and management services before and after the day of the patient's visit.

To identify services that were provided during a face-to-face encounter with a patient, the beginning and ending times of each encounter were recorded. Office encounters were defined as beginning when the patient was escorted to a consultation or examining room and ending when the patient left the room. Inpatient encounters were defined as starting when the physician first saw the patient or looked at the patient's chart and ending when the physician finished seeing the patient or looking at the chart. The duration of each such encounter ("encounter time") was calculated by summing the time the physician spent providing each type of evaluation and management service during the face-to-face encounter. The total time of the visit included the time spent providing evaluation and management services before and after the face-to-face encounter as well as during the encounter.

Physicians completing the survey were instructed to estimate the amount of work done in providing all of the evaluation and management services involved in each of their visits with patients (including work done before, during, and after the face-to-face

encounter). However, they were told to exclude the work involved in performing technical services and procedures billed separately from the visit.

Physicians estimated the total amount of work involved in each visit by comparing it with the amount of work involved in a hypothetical visit, described in a specialty-specific benchmark vignette,⁵ which was assigned a value of 100. For example, if the physician perceived that the actual visit involved twice as much work as the visit described in the vignette, he or she was instructed to assign it a value of 200. This technique, called magnitude estimation, is similar to the validated approach used by Hsiao et al. in the congressionally mandated study to develop a resource-based relative-value scale for Medicare payments to physicians.⁶

The benchmark vignettes were developed in consultation with physicians in each of the three specialties. Hypothetical situations were selected that would be familiar to all physicians in the specialty and interpreted uniformly. For example, the vignette for internal medicine was as follows: "Initial office evaluation of a 70-year-old man for the diagnosis and management of painless gross hematuria. Services provided by the physician include a problem-specific history and physical examination, counseling of the patient, arrangement for an outside intravenous pyelogram, and contact with a urologist to arrange for cystoscopy."

Statistical Analysis

The benchmark vignette differed for each specialty, so the estimates of work reported by physicians in the three specialties were on different scales. In order to pool the data, we converted the three specialty-specific scales to a uniform scale. For each specialty, the uniform scale set the median value at 100 for a visit involving a 30-minute office encounter with an established patient. The conversion factor was obtained by fitting separate regressions for each specialty that related the natural logarithm of total work to the logarithm of encounter time for established patients and then finding the multiplicative factor for each specialty that would produce a predicted total-work value of 100 for a 30-minute encounter.

Using the pooled data on a uniform scale, we performed multivariate linear regression to identify factors that were related to differences in the amount of work. The model related the logarithm of total work to the logarithm of encounter time and indicators for the characteristics of the visit. Logarithmic transformation was used because magnitude estimation requires physicians to evaluate percentage differences in work and the model based on logarithms describes how such differences vary with the explanatory variables. The model included interactions between encounter time and characteristics of the visit to allow for differences in the relation between time and work for different types of visit. We also tested for differences in the relation between time and work among the three specialties, but the differences were not significant and therefore this variable has been excluded from our model.

We used the fitted model to predict the total amount of work involved in visits with different characteristics. We also measured the intensity of work — defined as predicted total work per unit of encounter time — for different visits. Differences in the predicted total work for visits with varying characteristics were examined with use of a two-tailed t-test.

RESULTS

The total amount of work involved in providing evaluation and management services in actual practice was closely related to the time physicians spent in face-to-face encounters with patients (Table 1). For example, a visit including a 25-minute encounter with an established patient in the office involved 25 percent more total work than a visit including a 15-minute encounter, and a visit including a 45-minute

TABLE 1. INDEXES OF TOTAL WORK AND WORK INTENSITY ACCORDING TO TYPE OF VISIT AND ENCOUNTER TIME.

INDEX AND TYPE OF VISIT	ENCOUNTER TIME			
	10 MIN	15 MIN	25 MIN	45 MIN
Total work				
Established patient in office	84	100	125	159
New patient in office	80	100	133	186
Follow-up visit in hospital	82	100	128	171
Initial visit in hospital	78	100	137	195
Follow-up consultation	82	100	128	171
Initial consultation	82	100	128	171
Work intensity*				
Established patient in office	126	100	75	53
New patient in office	120	100	80	62
Follow-up visit in hospital	123	100	77	57
Initial visit in hospital	117	100	82	65
Follow-up consultation	123	100	77	57
Initial consultation	123	100	77	57

*Work intensity is total work per minute of encounter time. Total work and work intensity for a 15-minute encounter were set at 100 for each type of visit in order to emphasize the effect of encounter time.

TABLE 2. PERCENTAGE OF PHYSICIAN'S TOTAL VISIT TIME SPENT BEFORE AND AFTER THE ENCOUNTER ACCORDING TO TYPE OF VISIT AND ENCOUNTER TIME.*

TYPE OF VISIT	ENCOUNTER TIME	
	≤10 MIN	≥40 MIN
	% of total time	
Established patient in office	18	12
New patient in office	21	16
Follow-up visit in hospital	16	12
Initial visit in hospital	22	11
Follow-up consultation	22	17
Initial consultation	26	19

*Values show the percentage of a physician's total time during a visit that was spent on services performed before and after the face-to-face encounter with the patient or the patient's family (such as review of records and entry of information in the chart).

encounter involved almost 60 percent more total work than one including a 15-minute encounter.

Although the total work involved increased with longer encounter times, the total work did not increase in direct proportion to encounter time. Instead, visits with shorter encounter times were more intense (i.e., they involved more total work per unit of encounter time) than visits with longer encounter times (Table 1). For example, for office visits with established patients, those with 10-minute encounters were 26 percent more intense than those with 15-minute encounters, and those with 25-minute en-

counters were 25 percent less intense than those with 15-minute encounters. We found that visits of shorter duration were more intense than longer encounters for physicians in all three of the specialties we surveyed and for all types of visits included in the survey, but the degree to which work intensity increased as encounter times got shorter depended on the type of visit. The difference was most pronounced for office visits with established patients, less so for consultations, and least for office visits with new patients and initial hospital visits (Table 1).

One reason that visits with shorter encounter times were more intense is that they involved proportionally more time before and after the face-to-face encounter than visits with longer encounter times (Table 2). For instance, during visits with established patients that had encounter times of 10 minutes or less, physicians spent 18 percent of their total time providing services before or after the encounter with the patient, whereas for visits with encounters lasting more than 40 minutes, they spent only 12 percent of their total time performing services before or after the encounter. This finding probably reflects certain fixed evaluation and management services performed before and after the face-to-face encounter, such as review of records and entry of information on the chart, that were provided regardless of the duration of the encounter.

Another reason that visits with shorter encounter times were more intense is that they involved more overall work per minute, after other characteristics of the visit had been controlled for. In other words, the ratio of total work to total time was greater for shorter visits than for longer visits.⁵ The difference in work intensity between visits with short and long encounter times was not related to differences in the mix of evaluation and management services provided. Particular evaluation and management services, such as taking the history, performing the physical examination, and counseling the patient or family members, accounted for the same proportion of the total time regardless of the length of the encounter.⁵

The work involved in providing evaluation and management services also varied among visits with encounters of equal duration but with different characteristics. We investigated several characteristics that are indicators of complexity but that are easily measured, easily recorded, clinically meaningful, and verifiable. As shown in Table 3, which compares the total work done during various types of visits that lasted the same amount of time, four characteristics of the visit were important in predicting the amount of total work: whether the patient was new or established, whether the physician was initiating or continuing care, whether the patient was referred by another physician, and whether the physician was seeing the patient for a new or for a previously existing problem.

For example, among visits involving 15-minute en-

TABLE 3. TOTAL WORK ACCORDING TO TYPE OF VISIT OR PATIENT CHARACTERISTIC FOR VISITS INVOLVING A 15-MINUTE ENCOUNTER.

TYPE OF VISIT OR PATIENT CHARACTERISTICS	TOTAL WORK*
Type of visit	
Established patient in office	100
New patient in office	123†
Follow-up visit in hospital	92
Initial visit in hospital	120†
Follow-up consultation	107†
Initial consultation	146†
Characteristics of established patient seen in office	
Initiating treatment for new problem	107†
Continuing treatment for old problem	97
Age (yr)	
≤40	99
41–64	98
65–74	101
≥75	102
Impaired	108†
Unimpaired	100

*The total work for an office visit involving a 15-minute encounter with an established patient was set to equal 100.

† $P < 0.05$ for the comparison with a value of 100.

counters, the total work was 23 percent greater for office visits with new patients than for office visits with established patients, 30 percent greater for initial than for follow-up hospital visits, 36 percent greater for initial than for follow-up consultations, 22 percent greater for initial consultations than for non-consultative initial hospital visits, and 10 percent greater for office visits with established patients in which new rather than previously existing problems were addressed. All of these differences were statistically significant. For longer encounters, the differences in total work among these visit types were somewhat larger.

Other characteristics of the visit or patient that we studied in the survey were not important in predicting work. Neither the site of service (office or hospital) nor patient age had a significant effect on total work (Table 3). For visits with encounters of the same length, the total work was similar for initial hospital visits and office visits with new patients, and for follow-up hospital visits and office visits with established patients. The total work was also similar for visits with patients in different age groups: 40 or younger, 41 to 64, 65 to 74, and 75 years of age or older.

Although the total work involved in a visit varied according to whether the patient had substantial cognitive or physical impairment, the effect of this variable was small and inconsistent. For example, the amount of total work during office visits with established patients involving 15-minute encounters was

8 percent greater when patients were impaired than when they were unimpaired (Table 3). For 60-minute encounters, on the other hand, the predicted work was 8 percent less when patients were impaired.⁵

DISCUSSION

The adoption of a resource-based fee schedule by the Medicare program in 1989 required changes in the codes physicians used to bill for evaluation and management services.⁴ With the previous *Current Procedural Terminology* coding system, physicians in different parts of the country and different specialties used the same codes to bill for visits with patients that varied substantially in terms of the amount of work involved. Whereas this variation could be accommodated under the “customary, prevailing, reasonable” system of payment, in which fees for a service with a given code varied according to specialty and locality, it would not be equitable under a fee schedule that assigned a single resource-based relative value to each visit code nationally and applied this value to physicians in all specialties.^{4,5}

To meet the demands of the Medicare fee schedule and to discourage “up-coding” (the use of a higher level code than warranted) and overpayment, HCFA and the American Medical Association, through the editorial panel of *Current Procedural Terminology*, introduced new and progressively more complex guidelines for coding evaluation and management services. Deconstructing the various elements of visits into their components, these guidelines base coding, and therefore payment, on the particular mix of evaluation and management services that are documented and performed. In 1991, the members of the Physician Payment Review Commission expressed concern about this approach to coding, because the system appeared to introduce a degree of complexity beyond what was necessary and to compromise the goals of coding reform.⁴ Now, the most recently proposed revisions to these guidelines have engendered an uproar among physicians. Critics say the guidelines are inconsistent with clinical reasoning, distort the legitimate purposes of the medical record, do not lead to equitable compensation, and respond poorly to the problem of fraud and abuse in billing.^{2,3}

Our study, which was carried out to provide the Physician Payment Review Commission with information that would be helpful in revising codes for the Medicare fee schedule, does not support an implicit premise of the guidelines in *Current Procedural Terminology* — that the work involved in patient visits depends on the particular mix of evaluation and management services performed. Instead, consistent with the results of Hsiao et al.,⁶ our results demonstrate that encounter time is the single most important predictor of the total amount of work performed during a visit. The only other significant

variables we identified relate to differences in the type of visits (new vs. established patients, initial vs. follow-up inpatient care, new vs. previously existing problems, and consultations vs. nonconsultative visits).

These findings suggest that the demands of a resource-based payment system could be met with a much simpler approach than that used by HCFA and *Current Procedural Terminology*. The total amount of work involved in providing evaluation and management services in practice could be accurately reflected by a coding scheme based on blocks of encounter time and a limited set of types of visit. Such a scheme would have separate categories of evaluation and management codes for different types of visit (e.g., initial visit, consultation, visit with an established patient for a new problem, and follow-up visit for an existing problem). Each category of visit would have a set of codes reflecting blocks of encounter time that are meaningful in practice (e.g., 5, 15, 30, 60, and 90 minutes). Although the coding scheme would be based on the type of visit and blocks of encounter time, the reimbursement would be calculated to reflect the total work (i.e., work performed before, during, and after the face-to-face encounter with the patient) associated with the average encounter time for the block. Technical services and procedures provided during the visit would continue to be reimbursed separately.

This system would capture differences in the amount of work in a way that would be clinically meaningful and easy for physicians to use. An advisory panel to the Physician Payment Review Commission, made up of physicians, concluded that the different categories of visit could be defined clearly and verifiably and that encounter time was a clear concept that physicians could interpret uniformly and estimate accurately.⁵ Moreover, in practice, visits are usually scheduled according to blocks of encounter time.

Although any system, including the one we propose, is subject to fraud and abuse, we believe the inverse relation between work per minute (work intensity) and the length of the encounter (encounter time) would encourage efficient practice and discourage up-coding. Since payment per minute of encounter time would decrease as visits became longer, such a fee structure would incorporate automatic safeguards against spending more time than needed with a patient or providing more extensive evaluation and management services than were medically necessary.

From a policy perspective, the inverse relation between work intensity and encounter time is the key to making a simpler coding and documentation scheme possible. Yet this is the most controversial aspect of our findings. This relation differs from the intuitive perceptions of some physicians who partic-

ipated in the Physician Payment Review Commission advisory panel⁵ and from the findings of a study by Hsiao et al.,⁶ which were based on physicians' estimates of the time and work involved in evaluation and management for hypothetical patients.⁶ In our study, which was based on actual practice, however, this relation was observed for all types of visit and for patients' visits with physicians in all three of the specialties we surveyed. Equally important, the likely explanations for this finding — fixed services provided before and after the face-to-face encounter, regardless of the duration of the visit, and more concentrated work during shorter visits — seem reasonable to many physicians.^{2,4,5}

Although data from this study suggest the form that a reasonable coding and payment policy could take, we do not advocate basing payment on the exact work-time relations observed, for several reasons. Our findings are based on care provided in 1989. Although there is no reason to believe that the nature of the relation between work and time has changed, the quantitative relation may be different in today's managed-care environment. More important, the difference in work intensity between visits with short and long encounters in this study was so pronounced that the payment differential might encourage physicians to make encounters shorter than medically indicated or to fragment care (for example, to take care of a patient's problems in two short visits rather than one longer visit). Though such incentives are inherent in a fee-for-service system, a fee structure that paid substantially less per unit of time for long visits could be inequitable to physicians whose patients required long visits, and thus access to care for patients with multiple or complex problems could be compromised. The development of a sound policy on these issues would require taking into account the views of practitioners, consumers, and payers on the magnitude of the slope of the relation between total work and encounter time to be used in determining the reimbursement for different types of physician-patient visit.

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