

Billing Practices of North Carolina Family Physicians

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Background. This study describes billing practices of family physicians. Significant increases in the reimbursement for family physicians are expected from implementation of the resource-based relative value scale (RBRVS). However, the real impact of the RBRVS is unknown since little is known about how family physicians use the present reimbursement system to charge their patients.

Methods. A random sample of 270 North Carolina family physicians was surveyed, using standardized progress notes of five hypothetical patients.

Results. One hundred thirty-eight (51%) physicians responded; 107 (77.5%) were in private practice. Family physicians in private and nonprivate practices were similar in their Current Procedural Terminology (CPT) coding and level of service for each hypothetical case. Family physicians in smaller communities showed greater variation in CPT coding of visits than did fam-

ily physicians in larger communities, and they were more likely to use CPT codes that indicated a lower level of visit. Rural family physicians demonstrated a significant inverse relationship between the CPT level of visit coded (ranging from "brief," with a CPT code of 90040, to "comprehensive," coded CPT 90080) and the amount they charged established patients for a "limited" visit (CPT 90050).

Conclusions. These findings suggest that the lower income of rural physicians is due, in part, to billing at a lower CPT code, and thus charging less for comparable services, than urban physicians. The findings also lend further support to contentions that federal reimbursement reforms will have less impact on the incomes of rural physicians than originally expected.

Key words. Insurance, health, reimbursement; fees and charges. *J Fam Pract* 1991; 32:487-491.

Specialty and geographic differences in reimbursement by Medicare and other third-party payers is a continuing concern among physicians.¹ Some believe that such reimbursement policies result in economic hardship for family and general practitioners, particularly those in rural communities. The resource-based relative value scale (RBRVS) is supposed to help rectify inequities by increasing reimbursement for cognitive services and reversing geographic-based reimbursement differentials.²⁻⁴

The impact of these reforms on physician income is unknown, and there may be less effect than originally thought. One concern is that physicians may not be using the existing coding system accurately because the Current Procedural Terminology (CPT) levels of service are not precisely defined.⁵⁻⁷ Moreover, there is concern that this ambiguity may be used by the Health Care Financing Administration, under the mantle of payment reform,

to reduce office visit charges by downgrading levels of service.⁸

Despite the importance of coding in reimbursement policies, the literature on coding and charging is essentially nonexistent. To obtain an initial understanding of coding practices, we surveyed a random sample of family physicians in North Carolina to determine how physicians in private practice would bill for services based on progress notes for five hypothetical patients.

Methods

The data for this study were obtained by a questionnaire mailed to a random sample of 25% (N = 270) of all family physicians in North Carolina who were members of the North Carolina Academy of Family Physicians (NCAFP). The questionnaire contained progress notes on five hypothetical patients in connection with which the physician was requested to indicate the level of service he or she would bill for each of the relevant visits. The five cases included a 65-year-old man with a foot sprain, an 11-year-old boy with pharyngitis, a 30-year-old woman with hypertension and tobacco abuse who

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presented for a routine health maintenance examination, a 32-year-old woman with allergic rhinitis and bronchitis, and a 20-year-old woman with "mixed" vaginitis. Cases were selected to reflect common problems encountered by primary care physicians. Case presentations were tested for clarity in a pilot study using 21 academically affiliated family physicians, and the wording was modified according to the comments received. (Case presentations are available from the authors.)

The physicians surveyed were asked to provide demographic data about themselves, as well as data about their practices and training. In addition, they were queried about participation in Medicaid and Medicare and asked to determine what percentage of their practice was from self-payment and third-party payment: Champus, health maintenance organizations (HMOs), Medicaid, Medicare, non-HMO (indemnity) insurance, and worker's compensation. They also were asked to indicate their charge for a limited office visit by an established patient (CPT 90050). To investigate geographic differences in billing practices, responding physicians were classified into rural or urban categories, based on the size of the community in which they practiced. A rural physician was defined as one who practiced in a community with a population of fewer than 10,000 people. This community size represents a logical division for North Carolina communities, because there are few communities in the state with populations greater than 50,000.

The data analysis included estimating the association between variables: associations between categorical variables were assessed by the chi-square statistic, and Pearson's product moment correlation coefficient (r) was used for continuous variables. The level of statistical significance was set at $P < .05$.

Results

Of 270 family physicians in the random sample, 138 (51.1%) responded. Three of the questionnaires were incomplete, leaving 135 to be analyzed. According to information provided by the American Academy of Family Physicians from a previous survey, respondents were similar to other members of the NCAFP in age, sex, and practice location, but were significantly ($P < .01$) more likely than other NCAFP members to be board certified in family practice (93.3% vs 79.5%), to practice primarily in settings other than private practice (20.7% vs 8.9%), and to have a practice arrangement other than solo, partnership, or single specialty group (12.6% vs 0.7%). Of the 135 respondents, 107 (79.3%) were in private practice. The remaining physicians were in academic ($n = 10$), hospital ($n = 5$), industrial or military

Table 1. Personal and Practice Characteristics of Respondents, by Type of Practice (percent)

Characteristic	Type of Practice		P Value
	Private (n = 107)	Other (n = 28)	
Age (y)			.22
≤ 34	18.7	35.7	
35-44	47.7	46.4	
45-54	11.2	10.7	
55-64	15.9	3.6	
≥ 65	6.5	3.6	
Male	84.1	82.1	1.00
White	93.5	89.3	.73
Board-certified	94.4	89.3	.59
Residency-trained	77.6	89.3	.27
>100 patients/week	79.4	47.4	<.001
Rural practice [†]	46.7	10.7	
Urban practice [‡]	53.3	89.3	<.001

*Based on chi-square statistic.

[†]Rural—population <10,000; [‡]Urban—population >10,000.

($n = 5$), salaried HMO ($n = 1$), and minor emergency center ($n = 7$) positions.

Family physicians in private and nonprivate practice were remarkably similar in personal characteristics, but differed significantly in weekly patient load and geographic location of practice (Table 1). There were no statistically significant differences between private and nonprivate physicians in coding practices, except in the case of foot sprain (Table 2). Family physicians in nonprivate practices, however, tended to bill at a lower level of visit intensity (CPT) than those in private practice.

There were no statistically significant differences in personal or practice characteristics between rural and urban physicians in private practice (Table 3). Rural physicians, however, were more likely to be in solo practice and to have a slightly larger patient load. The usual office charge of rural physicians for a limited visit of an established patient (CPT 90050) also tended to be less than that of urban physicians (Figure 1).

Rural- and urban-based physicians were similar in coding visit level, although rural physicians showed more variability (Table 4). Statistical significance in coding differences is approached in the cases of the elderly man with foot sprain and the young adult woman with rhinitis and bronchitis.

Physicians in rural practice were more likely to have a larger percentage of patients who received Medicaid or Medicare benefits or who self-paid. This was significantly so for the percentage of Medicaid patients. The CPT level

Table 2. Percent of Practices That Billed Hypothetical Cases at Various Current Procedural Terminology (CPT) Visit Levels, by Type of Practice

Hypothetical Case and Practice Type	Level of Visit (CPT Code)					P Value
	Brief (90040)	Limited (90050)	Intermediate (90060)	Extended (90070)	Comprehensive (90080)	
Foot sprain						.03
Private	3.8	66.0	30.2	0.0	0.0	
Other	7.1	64.3	21.4	7.1	0.0	
Pharyngitis						.85
Private	17.0	72.6	10.4	0.0	0.0	
Other	21.4	67.9	10.7	0.0	0.0	
Health maintenance						.08
Private	0.0	4.7	26.2	39.3	29.9	
Other	0.0	0.0	28.6	60.7	10.7	
Rhinitis and bronchitis						.75
Private	6.5	73.8	19.6	0.0	0.0	
Other	10.7	71.4	17.9	0.0	0.0	
Mixed vaginitis						.47
Private	0.9	30.8	51.4	15.9	0.9	
Other	0.0	35.7	60.7	3.6	0.0	

of visit selected for each case, however, was not related to the percentage of patients in the practice who had Medicare, Medicaid, or commercial insurance, or who paid for services themselves. For every hypothetical case, as the

Table 3. Personal and Practice Characteristics of Private Practitioners, by Location of Practice (percent)

Characteristic	Practice Location Population		P Value
	<10K (n = 50)	>10K (n = 57)	
Age (y)			.52
≤34	24.0	14.0	
35-44	40.0	54.4	
45-54	10.0	12.3	
55-64	18.0	14.0	
≥65	8.0	5.3	
Male	86.0	82.5	.62
White	94.0	93.0	.83
Board-certified	94.0	94.7	.87
Residency-trained	80.0	75.4	.57
Practice type			.09
Solo	54.0	28.1	
Partnership	14.0	38.6	
Single specialty	26.0	22.8	
Multiple specialty	6.0	8.8	
Other	0.0	1.8	
Weekly patient load (No. of patients)			.26
<100	14.0	26.3	
100-150	64.0	57.9	
>150	22.0	15.8	

amount charged for a limited visit of an established patient (CPT 90050) increased, the CPT-intensity level of the visit was coded lower. This association was statistically significant in four of the five hypothetical cases for rural physicians (Table 5). The exception was the case involving the visit for a routine health examination.

There were no statistically significant differences between physicians in solo practice and those in group practice, regardless of the geographic location. (Results may be obtained from the authors on request.) Physicians in solo and group private practice were similar in

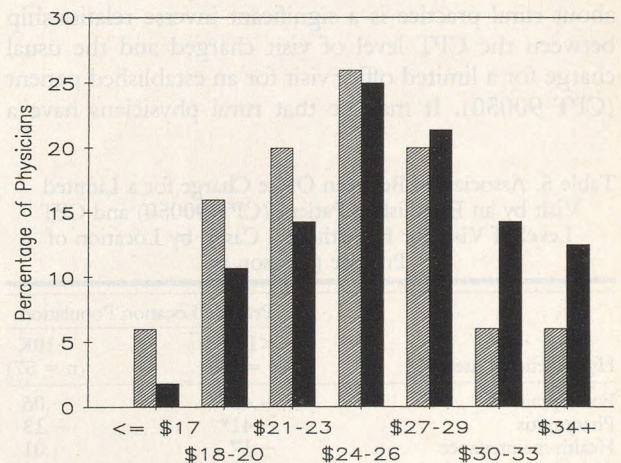


Figure 1. Charges by rural and urban North Carolina family physicians for a limited office visit by an established patient (CPT 90050). Black bars denote urban, hatched bars denote rural practice locations.

Table 4. Percent of Practices That Billed Hypothetical Cases at Various Current Procedural Terminology (CPT) Visit Levels, by Location of Practice

Hypothetical Case and Practice Location*	CPT Level of Visit (CPT Code No.)					P Value
	Brief (90040)	Limited (90050)	Intermediate (90060)	Extensive (90070)	Comprehensive (90080)	
Foot sprain						.08
Rural	8.0	60.0	32.0	0.0	0.0	
Urban	0.0	71.4	28.6	0.0	0.0	
Pharyngitis						.33
Rural	22.0	66.0	12.0	0.0	0.0	
Urban	12.5	78.6	8.9	0.0	0.0	
Health maintenance						.44
Rural	0.0	4.0	32.0	32.0	32.0	
Urban	0.0	5.3	21.1	45.6	28.1	
Rhinitis and bronchitis						.10
Rural	12.0	68.0	20.0	0.0	0.0	
Urban	1.7	79.0	19.3	0.0	0.0	
Mixed vaginitis						.43
Rural	2.0	30.0	46.0	20.0	2.0	
Urban	0.0	31.6	56.1	12.3	0.0	

*Rural—population <10,000; urban—population >10,000.

demographic and training characteristics, and had similar patient loads. Physicians in solo practice showed more variability in coding the level of visit and tended to use CPT codes indicating a higher level of visit.

Discussion

Physicians in private practice in rural communities tended to vary more in the CPT level of visit billed and tended to charge established patients less than did urban physicians for a limited office visit. Of particular interest about rural practice is a significant inverse relationship between the CPT level of visit charged and the usual charge for a limited office visit for an established patient (CPT 90050). It may be that rural physicians have a

closer relationship with their patients, and hence are more aware of and responsive to their patients' abilities to pay. Rural patient populations were poorer, as indicated by the percentage of patients reported to be covered by Medicaid or who paid for services themselves.

Rural physicians also may have lower income expectations, and bill accordingly, at lower levels. Our assumption that the CPT level of visit selected would be associated with the socioeconomic situation of the patient was not shown. Further inquiry into reasons for the reported charging level is needed.

Billing patterns may provide clues to the possible impact of payment reform on income. Our results suggest that rural family physicians may realize smaller increases in income under payment reforms than originally assumed because they seem to be undervaluing their services. They may be able to gain additional income just by billing visits at a CPT level commensurate with their urban counterparts.

Our findings are from a selective sample of family physicians, and thus may not be indicative of the billing practices of private physicians in general. Nevertheless, the use of hypothetical case studies to evaluate the coding behavior of physicians has been shown to provide an accurate indication of actual practices for the population studied.⁴ Moreover, the general lack of statistical significance of the coding patterns may be due to the small sample size. The results, then, yield a productive base for further investigation.

Table 5. Association Between Office Charge for a Limited Visit by an Established Patient (CPT 90050) and CPT Level of Visit for Hypothetical Cases, by Location of Practice (Pearson *r*)

Hypothetical Cases	Practice Location Population	
	<10K (n = 50)	>10K (n = 57)
Foot sprain	-.42*	-.06
Pharyngitis	-.41*	-.13
Health maintenance	-.17	-.01
Rhinitis and bronchitis	-.33†	.06
Mixed vaginitis	-.42*	-.16

*P < .01.

†P < .05.

CPT—Current Procedural Terminology.

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