Benefits and Costs to Community-Based Physicians Teaching Primary Care to Medical Students

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The purpose of this study was to determine the benefits and costs to community-based primary care physicians teaching medical students in their offices. Survey data were collected from 185 preceptors between 1990 and 1996. Respondents reported increases in their enjoyment of the practice of medicine (82%), time spent reviewing clinical medicine (66%), desire to keep up with recent developments in medicine (49%), and patients' perception of their stature (44%). However, 61% reported a decrease in the number of patients seen when a student was present. We conclude that despite the costs associated with teaching medical students in their offices, preceptors derived many benefits.

KEY WORDS: physician satisfaction; benefits of teaching; costs of teaching.

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There has been a marked shift in the approach to the education of medical students. Traditionally, future physicians have been under the tutelage of hospital-based subspecialists. Now, medical schools are implementing courses in which students are sent to the offices of community-based primary care physicians for an increasing portion of their education.¹ The Advisory Committee of the Society of General Internal Medicine/Clerkship Directors in Internal Medicine has recommended that 50% of the internal medicine clerkship be devoted to ambulatory care.² The demand for community-based primary care physicians as educators has become so great that it may exceed the supply of physicians willing to teach medical students in their offices.³

To increase the supply of physician-educators, it is important to understand the costs and benefits of teaching, both actual and perceived, and to minimize the costs while increasing the benefits.⁴ Several studies have examined the costs of educating medical students in community-based sites. Although most have found that the productivity of

physicians is reduced when they teach medical students,⁵⁻⁹ a few have found little direct impact on productivity.^{10,11}

We could identify only one study, done at an HMO, that systematically addressed the benefits of having a medical student in the office setting.⁶ This survey found that physicians teaching medical students reported enhanced provider education and joy of practice, as well as improved quality of care and patient satisfaction. No study to date has looked at a broad spectrum of community-based primary care physicians already involved in teaching medical students in their offices to evaluate the advantages and disadvantages, both monetary and nonmonetary. This information would be helpful in constructing appropriate incentives for teaching and could assist in preceptor recruitment.

The purpose of this study was to determine perceived benefits and costs of teaching medical students in a wide variety of community-based primary care physicians' offices. We hypothesized that teaching would increase physician job satisfaction, professional growth, perceived professional stature, and patient satisfaction, but also increase costs to the practice.

METHODS

The subjects were all community-based primary care physicians who served as preceptors for Introduction to Primary Care, a course for first- and second-year students at New York Medical College (NYMC), from academic year 1989-90 through 1995-96. The first-year component includes 10 3-hour sessions in a community-based primary care physician's office. Each session emphasizes a curricular topic in primary care. The second year incorporates 16 3-hour office-based sessions, covering basic elements of interviewing skills and physical diagnosis.

Preceptors for the course practice in an 11-county area in and around New York City. Practices are situated in urban, suburban, and rural areas, and span all income and ethnic groups. Preceptors are limited to the three primary care specialties of general internal medicine, general pediatrics, and family practice. Preceptors are not paid, but do receive faculty appointments, access to the NYMC computer network, free continuing medical education courses, library privileges, and reduced tuition to the NYMC Graduate School of Health Sciences.

The study was a cross-sectional survey mailed to each of the preceptors at the end of their first year of precepting for Introduction to Primary Care. At the midpoint of the 1995-96 academic year, all active preceptors who had not previously responded were sent a second copy of the survey to complete.

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Preliminary results of the first year of the study were presented as a poster at the annual meeting of the Society of General Internal Medicine in May 1990.

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The survey instrument was constructed by two of the authors (Drs. Grayson and Lugo). Five items collected demographic data on the primary care physicians, including their type of practice, specialty, and previous experience with teaching. Fourteen items were developed to assess perceived benefits and costs of teaching medical students in five broad areas: cost, physician satisfaction, professional growth, professional status, and patient benefit. Items were not grouped by category on the questionnaire nor were they identified as relating to either costs or benefits.

Data were analyzed in two ways. First, the percentage of respondents indicating increased or decreased effect for each survey item was generated along with the 95% confidence interval. Second, data were examined for differences in survey responses based on characteristics of the preceptor, e.g., specialty and type of practice. Student's *t* tests and one-way analysis of variance procedures were used for normally distributed data. Scheffe's procedure adjusted for multiple comparisons. Wilcoxon Rank-Sum and Kruskal-Wallis Tests were used for nonnormally distributed data. Bonferroni's adjustment accounted for multiple comparisons. Significance levels were set at $p \leq .05$.

RESULTS

Of the 247 physicians surveyed between 1990 and 1996, 185 (75%) completed the survey. Respondents' specialties, practice types and teaching profiles are listed in Table 1. The responses to the survey, with corresponding 95% confidence intervals, are presented in Table 2. When physicians were asked, "Did the presence of our primary care student in your practice increase or decrease your enjoyment of the practice of medicine?" 82% responded that the experience increased their enjoyment. In addition, 41% stated that the presence of a medical student

increased staff satisfaction, with 8% responding that it decreased staff satisfaction.

Four items measured the preceptors' assessment of their professional growth and abilities. Sixty-six percent of the preceptors stated that the time they spent reviewing the basics of clinical medicine increased when they worked with a medical student, and 49% stated that having a student increased their desire to keep up with recent developments in medicine. Forty percent increased the time they spent keeping up with the medical literature when a student was present. The majority of preceptors (71%) stated that having a student in their office did not change their confidence in their abilities as a physician. For none of the above questions did more than 2% of preceptors report a decrease in their confidence or abilities.

Although the majority of physicians (79%) felt that precepting a student did not change their professional stature with colleagues, 44% stated that having a student in their office enhanced their stature with their patients. Half felt that time spent on patient education increased when the student was present. Although 62% of physicians felt that there was no change in patient satisfaction, 34% felt there was an increase in patient satisfaction when the student was at the practice. However, 83% of preceptors felt that the quality of patient care remained unchanged when a student was present, with only 1% agreeing that it was negatively impacted.

Several items examined the physician's assessment of the cost and workload related to having a student at the office. Sixty-one percent of preceptors stated that the number of patients seen when a student was present decreased. On a related question, 65% of preceptors felt that their costs for practice were the same when a student was present, while 32% of the preceptors felt their costs increased. A slightly higher percentage (40%) felt that the workload for the office staff was increased on days the student was present.

Characteristics of preceptors and their teaching experience were also examined using the five subscales. No statistically significant differences were found by level of student or between those preceptors who had previous teaching experience and those who did not. One-way analysis of variance showed no statistically significant differences in ratings by specialty for any of the subscales. Finally, the responses of solo practitioners and preceptors in neighborhood health centers did not differ significantly from those of preceptors in other practice settings.

DISCUSSION

As expected, our results showed perceived benefits and costs to primary care physicians who train medical students in their offices. Our study found that a major benefit of teaching a student was that the vast majority of physicians (82%) felt that this increased their enjoyment of the practice of medicine. This is similar to two earlier studies; in one by Kirz and Larsen, 74% of physicians at

Table 1. Characteristics of Survey Respondents

Characteristic	%
Specialty	
General internal medicine	45
General pediatrics	38
Family medicine	17
Practice type	
Solo	35
Group	23
Hospital-based clinic	19
Neighborhood health center	16
HMO	7
Previous teaching experience	
Yes	67
No	33
Year of NYMC student	
First year	70
Second year	30

Table 2. Responses to Survey Questions About the Benefits and Costs of Teaching Medical Students in a Primary Care Physician's Office

Survey Topics	Responses, <i>n</i>	Increased, % (95% CI)	No Change, % (95% CI)	Decreased, % (95% CI)
Physician satisfaction				
The enjoyment of the practice of medicine	177	81.9 (75.4, 87.3)	15.5 (10.3, 21.4)	2.6 (0.92, 6.5)
The satisfaction of the office staff	180	40.6 (33.3, 48.1)	51.1 (43.6, 58.6)	8.3 (4.7, 13.4)
Professional growth				
The time spent reviewing the basics of clinical medicine	177	65.5 (58.0, 72.5)	34.5 (27.5, 42.0)	0.0 (0.0, 2.6)
The desire to keep up with recent medical developments	177	49.2 (41.6, 56.8)	50.8 (43.2, 58.4)	0.0 (0.0, 2.6)
The time spent keeping up with medical literature	177	39.5 (32.3, 47.2)	58.2 (50.6, 65.5)	2.3 (0.62, 5.7)
Confidence in my ability as a physician	185	28.1 (21.8, 35.2)	70.8 (63.7, 77.2)	1.1 (0.13, 3.85)
Status				
The patient's perception of my stature within the medical profession	167	43.7 (36.1, 51.6)	56.3 (48.4, 63.9)	0.0 (0.0, 2.2)
Colleague's perception of my stature within the medical profession	175	20.0 (14.3, 26.7)	79.4 (72.7, 85.2)	0.6 (0.0, 3.1)
Patient benefit				
The time spent on patient education	176	49.4 (41.6, 56.8)	45.5 (37.9, 53.1)	5.1 (2.4, 9.5)
The patients' satisfaction with their medical care	170	33.5 (26.5, 41.2)	62.4 (54.6, 69.7)	4.1 (1.7, 8.3)
The overall quality of care given patients	176	15.9 (10.8, 22.2)	83.0 (76.6, 88.2)	1.1 (0.14, 4.0)
Costs				
The office staff's workload for the day	182	39.6 (32.4, 47.1)	52.2 (44.7, 59.6)	8.2 (4.7, 13.2)
The cost of practicing for that day	181	31.5 (24.8, 38.8)	64.6 (57.2, 71.6)	3.9 (1.6, 7.8)
The number of patients seen in an afternoon	185	0.0 (0.0, 2.0)	39.5 (32.4, 46.9)	60.5 (53.1, 67.6)

an HMO felt that teaching a medical student increased their "joy of practice";⁶ the other, by Fulkerson and Wang-Chen, found that 84% of community-based preceptors cited personal satisfaction as a major motivation for precepting.¹²

Having a student in the office led to activities that furthered professional growth, such as increased reading of the medical literature and reviewing the basics of clinical medicine. Again, a positive effect on professional growth was also found in Kirz and Larsen's study of HMO physicians, with 82% of physicians reporting that the presence of a student was beneficial to their professional education.⁶ Although there was an increase in activities relating to professional growth for preceptors, this did not alter their views of their competency as physicians, nor did it alter their sense of their colleagues' perception of their stature as physicians. In addition, a substantial minority of preceptors felt that their teaching activities had beneficial effects for their patients.

Two thirds of our physicians felt that the costs to the practice remained unchanged while approximately one third stated that the costs were increased. These findings are consistent with the conflicting results in the literature about the costs of educating students in the office setting. Although several studies have stated that there is no change in charges for the practice,^{10,11} others have found a decrease in productivity,^{5,6} and an increase in time spent at work to compensate for the time spent with the medical student.^{7,8}

Previous teaching experience with a medical student in the office setting had no effect on costs or benefits. The

benefits of precepting did not diminish if one had previously taught, and conversely, strategies for minimizing costs did not necessarily result from the experience. Both benefits and costs were similar across practice type and specialty, suggesting that a generalized effect is produced and is not mediated by practice organization or specialty.

The study has several limitations. First, it relies on the subjective assessments of the respondents. Second, the study is limited to preceptors for one course for first- and second-year medical students at one school. However, the geographic scope of the college's preceptor network, spanning urban, suburban, and rural sites, and the diversity of its primary care practice sites may allow for some generalized application of our results. Third, the physicians studied had all volunteered to accept medical students. It is possible that the opinions of physicians required to take medical students may not be as positive.

These findings come at a time of increasing need for more preceptors and decreasing resources for medical schools to reward teaching. With attitudes toward primary care within academic health centers remaining largely negative,¹³ community-based training may be the key to increasing the percentage of students choosing generalist careers. The results of this study may be used to help recruit preceptors by emphasizing the positive aspects of participating in a teaching program. In addition, those charged with hiring physicians may consider student teaching as a valuable tool in their efforts to recruit and retain quality physicians.

This survey relied on the respondent's perception of a benefit or cost. Although objective data would enhance

the findings, the preceptors' observations and assessments reveal how they, their patients, and those around them respond to the presence of a medical student. And it is this collective perception of the costs and benefits of community-based teaching that will largely determine if physicians continue to teach in their offices.

The need to recruit large numbers of community-based primary care physicians to teach medical students will remain a challenge. Fortunately, the results of this survey suggest that there are important benefits to teaching that go beyond whatever tangible rewards a medical school may offer. Indeed, given the major changes underway in the health care system and the resulting degree of uncertainty and anxiety among many physicians, being able to provide physicians with an experience that will enhance their professional growth and satisfaction may be the most compelling recruitment benefit of all.

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REFERENCES

1. Council on Graduate Medical Education. Third Report of the Council. Washington, DC: Department of Health and Human Services; 1992.
2. The Society of General Internal Medicine/Clerkship Directors in Internal Medicine. Core Medicine Curriculum Guide. Washington, DC: Bureau of Health Professions, Department of Health and Human Services; 1995:92-8. Contract No. 240-93-0029.
3. Wanted: a few good preceptors. AAFP Reporter. May 1994.
4. Gerrity MS, Pathman DE, Linzer M, et al. Career satisfaction and clinician-educators: the rewards and challenges of teaching. *J Gen Intern Med.* 1997;12 (suppl 2):S90-7.
5. Garg ML, Boero JF, Christiansen RG, Booher CG. Primary care teaching physicians' losses of productivity and revenue at three ambulatory-care centers. *Acad Med.* 1991;66:348-53.
6. Kirz HL, Larsen C. Costs and benefits of medical student training to a health maintenance organization. *JAMA.* 1986;256:734-9.
7. Vinson DC, Paden C. The effect of teaching medical students on private practitioners' workloads. *Acad Med.* 1994;69:237-8.
8. Vinson DC, Paden C, Devera-Sales A. Impact of medical student teaching on family physicians' use of time. *Fam Pract.* 1996;42:243-9.
9. Pawlson LG, Watkins R, Donaldson M. The cost of medical student instruction in the practice setting. *Fam Pract.* 1980;10:847-52.
10. Fields SA, Toffler WL, Bledsoe NM. Impact of the presence of a third-year medical student on gross charges and patient volumes in 22 rural community practices. *Acad Med.* 1994;69:S87-9.
11. Kearl GW, Mainous AG. Physicians' productivity and teaching responsibilities. *Acad Med.* 1993;68:166-7.
12. Fulkerson PK, Wang-Cheng R. Community-based faculty: motivation and rewards. *Fam Med.* 1997;29:105-7.
13. Block SD, Clark-Chiarelli N, Peters AS, Singer JD. Academia's chilly climate for primary care. *JAMA.* 1996;276:677-82.

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