

## SPECIAL ARTICLE

## COMPENSATION TO A DEPARTMENT OF MEDICINE AND ITS FACULTY MEMBERS FOR THE TEACHING OF MEDICAL STUDENTS AND HOUSE STAFF

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**Abstract Background.** Changes in the organization and financing of health care threaten to alter the prevailing system of financing the teaching of medical students and residents. Little information is available from private medical schools and teaching hospitals about the extent of teaching by faculty members or the mechanisms and levels of reimbursement for teaching.

**Methods.** We surveyed faculty members in the Department of Medicine at Columbia–Presbyterian Medical Center to ascertain the extent of their teaching activities. A standard number of hours was assigned to each activity, and the total number of teaching hours was calculated for each faculty member. Teaching of fellows and in continuing medical education programs was excluded. We also determined how much money the Department of Medicine received in payment for faculty members' teaching activities, and the sources of this compensation.

**Results.** In the 1992–1993 academic year, the 188 full-time faculty members spent a total of 46,086 hours teaching (mean [ $\pm$ SD],  $245 \pm 178$  hours per faculty member); 10,780 hours (23.4 percent) were spent teaching medical students, and 35,306 hours (76.6 percent)

teaching house staff. Eighty percent of faculty members taught for 137 or more hours each. In a multivariate analysis including faculty rank, subspecialty division, years since graduation from medical school, sex, and tenure or clinical track, we found that senior faculty members ( $P=0.02$ ), members of certain subspecialty divisions ( $P<0.001$ ), and women ( $P=0.05$ ) contributed more than the average number of teaching hours. An additional 56 non–full-time faculty members contributed a total of 5684 hours. The net reimbursement to the department for teaching totaled \$965,808, or about \$16 per hour of teaching by full-time faculty members, after the cost of fringe benefits was excluded.

**Conclusions.** Faculty members of the department of medicine at a major medical center contribute a large number of hours teaching medical students and house staff. This effort is poorly compensated. Cost-containment efforts have the potential to jeopardize fragile social contracts at academic health centers whereby the faculty participates in teaching by contributing unreimbursed or underreimbursed time. (N Engl J Med 1996;334:162-7.)

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**E**FFORTS to control health care costs have led to increasing pressures on academic health centers.<sup>1-4</sup> The mission of academic health centers includes teaching, research, and clinical care, and each of these activities has its own revenue streams: tuition from medical students for teaching, grants and contracts for research, and third-party reimbursement for clinical services. The same faculty members are often engaged in two or all three of these activities, however, and the boundaries among the three are blurred in many situations. Thus, costs often cannot be separately allocated to specific activities. Cost shifting and cross-subsidization occur both within the teaching, research, and clinical activities and among them.

One of the most important effects of financial pressure is to highlight these shifts in costs and revenues, and the individual physicians who make up the medical school faculty and hospital staff at academic health centers find themselves affected by institutional efforts to identify and justify each budgetary allocation, particularly those perceived as cross-subsidies. Less attention has been given to services provided by these physicians that are generally unreimbursed, such as the

teaching of medical students and members of the house staff. At our institution, all faculty members are currently expected to contribute to the teaching of medical students and house staff. Faculty members are also expected to generate all or most of their salary through research or clinical activities. However, at a time when payment for most physicians' services is stable or declining<sup>5,6</sup> and research grants have become more difficult to obtain,<sup>7-9</sup> faculty members may be less willing than in the past to contribute time to teaching without direct reimbursement.

We analyzed the number of hours spent in teaching by the faculty of the department of medicine at one academic health center in order to quantify this contribution. We were concerned with three specific issues. First, was this contribution made by a limited number of people who did a large amount of teaching, or was teaching spread widely and more or less evenly? Second, to what extent were variations in the amount of time spent in teaching related to factors such as sex, subspecialty division, rank, years since graduation from medical school, and type of appointment (clinical or research)? Third, to what extent were physicians compensated for their teaching activities?

## METHODS

A list of all teaching activities for the academic year running from July 1, 1992, through June 30, 1993, was generated from the records

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of the Department of Medicine at Columbia–Presbyterian Medical Center. Activities that combined clinical service and teaching, such as serving as attending physician on a ward, were counted in full as teaching time. We excluded teaching activities directed exclusively to fellows (e.g., supervision of endoscopic procedures or the electrophysiology laboratory) or graduate students and activities with no teaching component, such as patient care in the medical subspecialty clinics; teaching activities for which faculty members are paid in addition to their salaries, such as the department's annual board-review course, were also excluded. Activities related to the administration of courses, such as time spent by course directors in activities other than teaching, or to the administration of teaching activities, such as the time of division chiefs or the director of the Medical Service, were also excluded.

Each faculty member was sent a list of his or her major teaching activities and asked to verify its accuracy and completeness. These data were reviewed and verified again by three of the study investigators, with reference to departmental teaching schedules. Each faculty member then verified his or her list a second time. Each teaching activity was assigned a standard duration (e.g., one month for attending on a ward) and an estimated time in hours (Table 1) by one of the study investigators, in consultation with the department chairman and selected colleagues. For example, attending on a ward, which accounted for a total of 91 hours (Table 1), involved conducting rounds with house-staff members and students for 2 hours per day, 6 days per week, for 4.5 weeks (54 hours); writing and countersigning notes on charts (27 hours); reviewing and signing discharge summaries (2 hours); participating in meetings of attending physicians at the beginning and end of the month (2 hours) and in two grading sessions for the students (2 hours); completing written evaluation of house staff (1 hour); and writing letters of reference for house-staff members applying for fellowship programs (3 hours).

Of the department's 244 faculty members, 56 were excluded from the main analysis, 39 because they worked part-time, 8 because they had a primary appointment in a department other than that of medicine, 6 because they were based at a university-affiliated hospital other than the Presbyterian Hospital (the main teaching affiliate), and 3 because they were emeritus faculty members. The full-time faculty includes both clinical and research faculty members. Part-time appointments are given to physicians who practice in the community at hospitals not affiliated with the university but voluntarily contribute a limited amount of teaching time. Thus, all the 188 faculty members in the main analysis were full-time, with full clinical privileges at the Presbyterian Hospital. These full-time faculty members are all paid salaries through Columbia University.

In tabulating departmental teaching revenues, the same exclusions were applied as for teaching hours. Funds used to support administrative activities related to teaching were excluded. In addition, the amounts available to support the department's teaching activities were determined from the actual allocation of unrestricted funds.

The two-sample t-test was used to compare the means of two categories. The F test (from one-way analysis of variance) was used when more than two categories were compared, and groups from Tukey's studentized range test ( $\alpha = 0.05$ ) were computed, in order to adjust for multiple comparisons. Adjusted means were calculated with a least-squares linear-regression model, with simultaneous adjustment for the number of years since graduation from medical school, sex, faculty rank, subspecialty division, and type of appointment. Comparisons of these adjusted means were tested for statistical significance by F tests.

## RESULTS

The 188 full-time faculty members spent a total of 46,086 hours teaching (mean,  $245 \pm 178$  hours) in the 1992–1993 academic year. Of this time, 10,780 hours (23.4 percent) was spent teaching medical students and 35,306 hours (76.6 percent) teaching house-staff members (Table 1). The activities that accounted for the largest number of hours were serving as attending physician on a ward (13,468 hours, or 29.2 percent of the total) and acting as attending physician on a subspe-

Table 1. Teaching Activities, Hours Assigned to Each Activity, Faculty Members Involved in Each Activity, and Total Hours Spent in Each Activity.\*

ACTIVITY OR COURSE TITLE	NO. OF HOURS	NO. (%) OF FACULTY MEMBERS	TOTAL NO. (%) OF FACULTY HOURS
<b>Teaching medical students</b>			
Course director	Varied	6 (3)	460 (1.0)
Introduction to Clinical Practice (1st and 2nd years)	53	19 (10)	1,060 (2.3)
Introduction to the Patient (2nd year)			
Interviewing	25	5 (3)	125 (0.3)
Seminar	32	12 (6)	368 (0.8)
Physical Diagnosis (2nd year)	36	10 (5)	360 (0.8)
Abnormal Human Biology (2nd year)			
Lecturer (per lecture)	4	33 (18)	388 (0.8)
Section director	48	11 (6)	528 (1.1)
Preceptor	50	66 (35)	3,300 (7.2)
Clinical preceptor (3rd year; 6 weeks)	104	25 (13)	2,600 (5.6)
Ambulatory Care (4th year; 4 weeks)	Varied	34 (18)	1,206 (2.6)
Subinternship (4th year)	Varied	4 (2)	278 (0.6)
Advanced Pathophysiology lecture (4th year)	Varied	5 (3)	107 (0.2)
Total hours teaching medical students	—	—	10,780 (23.4)
<b>Teaching house staff†</b>			
Morning report, intern report	1	39 (21)	1,183 (2.6)
House-staff conferences	3	59 (31)	378 (0.8)
Ward service (4 weeks)	91	134 (71)	13,468 (29.2)
Private service (4 weeks)	51	19 (10)	1,071 (2.3)
AIDS service (4 weeks)	152	6 (3)	1,672 (3.6)
Medical ICU	149	6 (3)	2,906 (6.3)
Coronary care ICU (2 weeks)	39	28 (15)	1,287 (2.8)
Straddle ICU (4 weeks)	82	29 (15)	1,529 (3.3)
Allen Pavilion ICU (4 weeks)	80	8 (4)	1,040 (2.3)
Subspecialty service (2–4 weeks)	Varied	128 (68)	8,152 (17.7)
Chief of Service rounds (per session)	2	15 (8)	430 (0.9)
Clinic physician-in-charge (subspecialty and general medicine)	Varied	25 (13)	1,407 (3.1)
Resident Selection Committee	Varied	51 (27)	679 (1.5)
Team rounds (per lecture)	4	25 (13)	104 (0.2)
Total hours teaching house staff	—	—	35,306 (76.6)

\*There were 188 full-time faculty members who spent a total of 46,086 hours in teaching at Columbia–Presbyterian Medical Center in 1992–1993. Some faculty members accounted for more or less than one unit of some activities (e.g., two months of attending on a ward, or only half a month), so the total number of hours spent in each activity is not necessarily the product of the first two columns. The Allen Pavilion is a physically separate community-hospital component of the Presbyterian Hospital.

†AIDS denotes the acquired immunodeficiency syndrome, and ICU intensive care unit. The Straddle ICU is a combined medical and coronary care ICU.

cialty service (8152 hours, or 17.7 percent). No other activity accounted for more than 10 percent of the total, indicating the breadth of teaching activities in which the faculty was engaged. The activities related to the teaching of medical students that consumed the most hours were serving as preceptor in the second-year Abnormal Human Biology course (3300 hours, or 7.2 percent) and the third-year clinical rotation in internal medicine (2600 hours, or 5.6 percent). Physicians who attended on wards had contact with medical students as well as house staff, but this activity was classified as teaching house-staff members because it was not designed exclusively for students.

The 39 part-time faculty members contributed a total of 3572 hours of teaching; 8 faculty members with primary appointments outside the Department of Medicine contributed 780 hours; 6 who were based at other affiliated hospitals contributed 826 hours at Presbyterian Hospital; and 3 emeritus faculty members contribut-

ed 506 hours. Thus, a total of 5684 hours (mean, 102 hours per faculty member), or 11 percent of the total departmental teaching effort, was contributed by non-full-time faculty.

Table 1 also shows the broad participation of the faculty in the department's teaching activities. For example, 134 of the 188 full-time faculty members (71 percent) attended on wards, 128 (68 percent) attended on subspecialty services, and 66 (35 percent) participated in the Abnormal Human Biology course as preceptors (some served as section directors and lecturers as well). The frequency distribution of teaching hours for the 188 full-time faculty members (Fig. 1) also illustrates the breadth of the faculty's participation in teaching. The 20th percentile for time spent teaching was 137 hours; therefore, 80 percent of the faculty contributed at least this number of hours. The teaching effort involved substantial amounts of time on the part of a large proportion of the faculty, rather than very large contributions by a few; this was so despite the fact that eight faculty members each spent more than 500 hours in teaching. These were mainly the directors of the intensive care unit and the unit for patients with the acquired immunodeficiency syndrome (AIDS) and faculty members in the Infectious Disease Division who served as attending physicians for several months in the intensive care units, the AIDS unit, or the infectious-disease consultation service.

The large amount of time spent in teaching by the

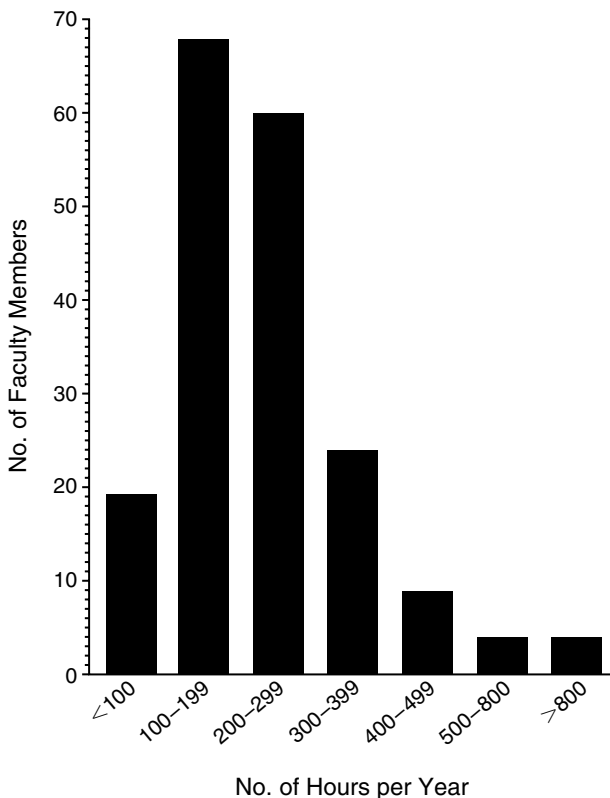


Figure 1. Frequency Distribution of the Hours Spent in Teaching by 188 Full-Time Faculty Members of the Department of Medicine, Columbia-Presbyterian Medical Center, 1992-1993.

Table 2. Hours Spent in Teaching per Faculty Member, According to Division and for the Entire Department of Medicine.

DIVISION	NO. OF FACULTY MEMBERS	NO. OF TEACHING HOURS/ FACULTY MEMBER	GROUP FROM
			TUKEY'S RANGE TEST*
		<i>mean ± SD</i>	
Infectious Disease	9	595±425	A
Pulmonary Medicine	13	309±296	A B
Allen Pavilion†	13	299±259	A B
Nephrology	15	270±79	A B
Rheumatology	11	248±143	B
Gastroenterology	17	243±83	B
Endocrinology	17	225±83	B
Hematology	6	219±87	B
Immunology	2	215±74	B
Cardiology	31	202±92	B
General Medicine	28	199±93	B
Preventive Medicine and Nutrition	4	184±67	B
Emergency Room	6	183±86	B
Oncology	12	181±79	B
Molecular Medicine	2	142±14	B
Allen Pavilion Emergency Room†	2	101±14	B
Total for department	188	245±178	

\*Tukey's studentized range test was used to compare the means of all the categories. Categories that do not differ at  $\alpha = 0.05$  share a group. All categories designated by the same letter were statistically indistinguishable from each other after adjustment for multiple comparisons. Thus, only the Infectious Disease Division had significantly more hours spent in teaching than other divisions.

†The Allen Pavilion is a physically separate community-hospital component of the Presbyterian Hospital.

faculty of the Infectious Disease Division is also reflected in the higher mean number of teaching hours per faculty member in this division (Table 2). It is noteworthy that after the exclusion of the Infectious Disease Division, the Division of Molecular Medicine, which provides no clinical care, and the emergency room at the Allen Pavilion (a physically separate community-hospital component of the Presbyterian Hospital), the mean number of hours per faculty member varied by less than 50 percent among divisions, ranging from a mean of 309 hours per year per faculty member for the Pulmonary Medicine Division to a mean of 181 hours per year per faculty member for the Oncology Division (Table 2). This analysis again reflects the breadth of the teaching contribution by faculty members. In bivariate analyses, senior faculty members taught more than junior faculty ( $P = 0.04$ ) (Table 3), but the number of hours of teaching did not differ significantly according to the length of time since graduation, the faculty member's sex, or type of appointment (clinical vs. tenure track).

In the multivariate analysis in which subspecialty division, length of time since graduation, sex, faculty rank, and type of appointment were simultaneously considered (Table 4), more teaching hours were contributed by women ( $F = 3.83$ , 1 df;  $P = 0.05$ ), senior faculty members ( $F = 3.57$ , 3 df;  $P = 0.02$ ), and faculty members in the Infectious Disease, Pulmonary, and Nephrology divisions ( $F = 4.12$ , 15 df;  $P < 0.001$ ).

Faculty salaries were derived primarily from clinical

Table 3. Hours Spent in Teaching, According to Selected Characteristics of Faculty Members.

CHARACTERISTIC	NO. OF FACULTY MEMBERS	NO. OF TEACHING HOURS/FACULTY MEMBER <i>mean ±SD</i>	GROUP FROM TUKEY'S RANGE TEST*	P VALUE
Years since graduation from medical school				0.30†
≤5	3	115±16	A	
6–10	27	219±184	A	
>10	158	252±178	A	
Sex				0.24‡
Male	147	234±151		
Female	41	284±252		
Faculty rank				0.04†
Instructor	12	159±60	B	
Assistant professor	88	221±143	A B	
Associate professor	45	280±187	A	
Professor	43	283±235	A	
Type of appointment				0.42‡
Clinical track	151	249±192		
Tenure track	37	230±103		

\*Tukey's studentized range test was used to compare the means of all the categories. Categories that do not differ at  $\alpha = 0.05$  share a group. All categories designated by the same letter were statistically indistinguishable from each other after adjustment for multiple comparisons. Thus, instructors taught significantly fewer hours than associate professors.

†Based on the F test in a one-way analysis of variance.

‡Based on the two-sample t-test.

revenues, with less than 8 percent of the total coming from central hospital and university funds (Table 5). Departmental revenues available to compensate faculty members for time spent in teaching were relatively small (Table 6). Professional fees collected by the Medical Service, totaling \$516,336, were for clinical services provided in the setting of the teaching service. These fees were offset by the cost of collection, which was relatively high in relation to revenue because of the high proportion of Medicaid patients, and by the cost of departmental administration, which was met in part from this source. Hospital support, totaling \$1,157,786, for teaching, administration, and supervision of teaching programs, included support for attending physicians on wards, chiefs of services, and the supervision of house staff in the ambulatory care setting by attending physicians. At the Allen Pavilion, the director of the Medical Service, the codirectors of the medical intensive care unit, and the director of the Infectious Disease Division each received some salary support from the hospital. These four faculty members all spent many hours teaching; half the amount provided by the hospital to the Allen Pavilion Medical Service was allocated as teaching revenue (Table 6), whereas the other half was considered support for departmental administrative activities. The support from the Presbyterian Hospital was offset by the direct cost of the house-staff program.

The university allocated a total of \$1,301,892 from central funds to the Department of Medicine. This was offset by \$909,021 that the department returned as payment of the dean's tax on clinical revenue (a proportion of revenues from the income of the practice plan). The remaining \$392,871 was used to support de-

partmental administration. Thus, none of these central funds were available for direct support of teaching. The university also allocated a total of \$101,290 to the directors of three departmentally based courses (Abnormal Human Biology, Clinical Practice, and Introduction to the Patient). This amount was offset in part by the costs of course administration and production of the syllabus.

The total amount available to the Department of Medicine in support of its teaching was therefore \$965,808, or \$20.96 per hour, exclusive of fringe benefits and excluding the 3572 hours spent by part-time faculty members in teaching. The fringe-benefit rate is 33.5 percent; after the cost of fringe benefits was subtracted, the compensation to the department for teaching by faculty members was approximately \$15.70 per hour. These departmental teaching revenues were passed through to the divisions but not linked line by line to support for individual faculty members, nor were these funds specifically earmarked for the support of teaching, as distinct from research, administration, clinical programs, or fellowship programs.

Of the 188 full-time faculty members, 43 received some direct salary support from the department, other

Table 4. Hours of Teaching, According to Selected Characteristics of Faculty Members, with Simultaneous Adjustment for Years since Graduation, Sex, Rank, and Type of Appointment.

CHARACTERISTIC	NO. OF HOURS/FACULTY MEMBER*	P VALUE
Years since graduation from medical school		0.73
≤5	154±110	
6–10	235±38	
>10	247±27	
Sex		0.05
Male	182±41	
Female	241±48	
Faculty rank		0.02
Instructor	146±53	
Assistant professor	177±47	
Associate professor	253±55	
Professor	272±54	
Type of appointment		0.36
Clinical track	228±41	
Tenure track	196±48	
Division		<0.001
Infectious Disease	564±64	
Pulmonary Medicine	276±62	
Allen Pavilion†	304±58	
Nephrology	235±58	
Rheumatology	221±62	
Gastroenterology	210±56	
Endocrinology	166±56	
Hematology	188±78	
Immunology	168±118	
Cardiology	171±51	
General Medicine	174±51	
Preventive Medicine and Nutrition	152±89	
Emergency Room	227±76	
Oncology	158±63	
Molecular Medicine	102±119	
Allen Pavilion Emergency Room†	85±120	

\*Values are adjusted means ±SD.

†The Allen Pavilion is a physically separate community-hospital component of the Presbyterian Hospital.

than revenues from clinical services or grants; 13 of these 43 were division chiefs or the chair or associate chair of the department. The departmental salary support for these 13 faculty members with major administrative responsibilities was excluded from the total amount available for teaching compensation; it is shown in Table 6 as the amount expended for departmental administration under "professional fees collected." Only 1 of the 39 part-time faculty members who spent time teaching received any salary support from the department. Thus, the majority of faculty members who taught medical students and residents within the department received no salary support from it and therefore were not compensated for the time they spent teaching. Faculty members who did receive salary support through divisional budgets may be viewed as receiving compensation for their teaching, but in most cases this was not made explicit. The general departmental philosophy was and is that teaching is a service required of faculty members as part of the privileges and obligations of faculty appointment.

### DISCUSSION

In the academic year 1992–1993, 188 full-time faculty members of the Department of Medicine spent 46,086 hours teaching residents and medical students (for a mean of 245 hours per person per year). There was remarkably little variation in this level among sub-

Table 5. Sources of Salary Support for Full-Time Faculty Members of the Department of Medicine, 1992–1993.\*

SOURCE	AMOUNT (\$)	PERCENT OF TOTAL
Clinical revenues†	19,817,195	73.84
Sponsored research	2,810,040	10.47
Hospital payments for clinical activities‡	2,127,966	7.93
Hospital payments for teaching and administration§	1,157,786	4.31
Medical-school payments for teaching and administration¶	303,304	1.13
Gifts and endowments	620,249	2.31
Total	26,836,540	

\*Data in this table are based on 174 of the 188 full-time faculty members for whom teaching hours were tabulated. The other 14 faculty members received no funds directly from the Department of Medicine. Nine were paid directly from private-practice income derived outside the departmental practice plan, and three were paid directly from hospital budgets because they held administrative positions; one was paid directly from university budgets because he held an administrative position in the dean's office, and one was paid by another department in which he held his primary appointment. The amounts shown include salary and fringe benefits.

†Includes the amounts shown under "professional fees collected" in Table 6.

‡This category represents salaries for faculty members in the hospital-based ambulatory care practice, hospital-based diagnostic-testing laboratories (e.g., pulmonary-function testing and noninvasive cardiac testing), and other hospital-supported inpatient clinical functions.

§Represents the total shown in Table 6 as "support from Presbyterian Hospital" before the subtraction of the direct cost of the house-staff program.

¶The actual amount available to the department from the university included the \$392,871 shown in Table 6 for departmental administration plus \$31,296 (payments to course directors less the cost of the course administration and syllabus), totaling \$424,167. Of this amount, \$303,304 was used for faculty salaries and the remainder for the salaries of administrative staff and other administrative costs.

Table 6. Departmental Teaching Revenues and Offsets, 1992–1993.\*

CATEGORY	AMOUNT (\$)
Professional fees collected	
Ward attending physicians	237,032
Medical consultation service	16,429
Medical intensive care unit	262,875
Offsets	
Cost of collection (20%)	(103,267)
Departmental administration	(331,660)
Support from Presbyterian Hospital	
Ward attending physicians	856,366
Chiefs of service	65,697
Ambulatory medicine	133,433
Allen Pavilion†	102,290
Offsets	
Direct cost of house-staff program	(304,683)
Support from Columbia University‡	
Central funds	1,301,892
Offsets	
Dean's tax§	(909,021)
Departmental administration	(392,871)
Payments to course directors¶	101,290
Offsets	
Course administration and syllabus	(69,994)
Total	965,808

\*Offsets, the amounts of which are shown in parentheses, are externally imposed costs or internally derived budgetary allocations.

†The Allen Pavilion is a physically separate community-hospital component of the Presbyterian Hospital. This amount includes 50 percent of the hospital-supported time of the codirectors of the Allen Pavilion intensive care unit, the director of the Allen Pavilion Infectious Disease Service, and the director of the Allen Pavilion Medical Service, calculated on the basis of teaching hours included in the tabulation but exclusive of educational administration.

‡A grant from the Robert Wood Johnson Foundation to the university provided funds for the development of new curriculum materials for the Clinical Practice course. These funds supported several Department of Medicine faculty members who developed new curriculum materials, but they did not support actual teaching time. Time spent in developing new curriculum was not counted in the tabulation, and these funds were therefore excluded.

§The dean's tax on practice-plan clinical income was paid by the department.

¶The university provided this total amount for the administration of three departmentally based courses (Abnormal Human Biology, Clinical Practice, and Introduction to the Patient).

specialty divisions, with the exception of the Infectious Disease Division, whose faculty members did significantly more teaching than those in the other subspecialties. Senior faculty members taught somewhat more than junior faculty members, and women somewhat more than men. However, our chief conclusion from these analyses is that almost all the faculty spent substantial time teaching medical students and residents and that the overall effort reflected this broad distribution of teaching time, rather than many hours spent in teaching by a subgroup. The amount of financial support was small in relation to the extent of the teaching by department faculty members.

Our estimates of total teaching time are almost certainly conservative, for several reasons. We excluded 56 non-full-time faculty members from the main analysis; taken together, these men and women taught for a total of 5684 hours, or 11 percent of the total departmental teaching effort. We also excluded teaching activities outside the Department of Medicine by faculty members who had primary appointments in that department but who taught both in medicine and in other departments of the Medical School, such as the Department of Phys-

iology, or in the School of Public Health. Many hours of informal teaching were also excluded.

The observation that the senior faculty spent more time in teaching than the junior faculty may reflect the fact that tenure-track junior faculty members are protected from some teaching responsibilities as well as the fact that senior faculty are committed to the department's teaching programs, particularly the Abnormal Human Biology course, and to service as attending physicians on wards and subspecialty services. It is also possible that the greater amount of teaching by these faculty members was a consideration in their promotion to senior rank. It is of interest that women contributed more hours of teaching than men.

We could not completely separate the teaching of medical students from the teaching of the house staff and fellows. Although some of the teaching activities shown in Table 1 clearly involve only medical students, such as the Clinical Practice and Abnormal Human Biology courses and the activities of preceptors for the third-year medical clerkship, other activities, such as attending on a ward, involve a mixture of students and house-staff members, and some, such as the subspecialty consultation service, include students, house staff, and fellows. We excluded teaching directed exclusively to fellows — for example, supervising endoscopy, bronchoscopy, or the electrophysiology laboratory.

The amounts of time spent in teaching undoubtedly vary widely among departments as well as among institutions. Our institution may not be typical of academic health centers across the country, and the amount of teaching time may be greater at Columbia than elsewhere, for several reasons. The time-intensive commitment to the teaching of medical students has already been described. Two attending physicians are assigned to our teaching services, whereas many other institutions use a single attending physician. We also have a very large medical service, with nearly 500 beds, and a commensurately large house staff of approximately 150 residents (as of the time this study was done).

At our institution faculty members in the Department of Medicine are largely responsible for generating their own incomes, through either clinical activities or research grants, and there is relatively little central financial support for teaching activities from either the hospital or the university. At academic health centers with direct state financing, support for teaching may be more widespread. Clinical arrangements in our department are diverse and include private practice, departmental clinical-practice plans, and full-time salaried status. Other academic health centers with mainly full-time staffs or hybrid arrangements may build teaching into these arrangements in ways that are not possible in the private-practice model.

A substantial amount of federal money is currently paid to academic health centers and teaching hospitals that is specifically designated as compensation for the costs of training house staff.<sup>1,4</sup> These funds are awarded as the direct and indirect medical-education components of the Medicare payment for hospital services and are meant to support the salaries, fringe benefits,

and administrative costs of house staff, the costs of teaching, and the greater cost of care in a teaching setting. One conclusion of our study is that the amount of money passed through to the Department of Medicine from these funds is not commensurate with the time spent by physicians on the faculty in training members of the house staff.

The necessity for unreimbursed teaching has traditionally been accepted as a *quid pro quo* for appointment to the university faculty, which was until recently a requirement for hospital privileges, but hospital admitting privileges have recently been opened to non-teaching physicians. Another traditional benefit of the teaching program to the clinical faculty members has been that their private inpatients are covered by house staff, but private patients are increasingly being treated as outpatients, short-stay inpatients, or "off-service" patients who are not cared for by the house staff. Thus, the residents are serving the needs of the private attending physicians less clearly than before, and the perceived benefit of teaching is correspondingly less. As hospitals expand their part-time faculty to increase admissions, while exempting many of these part-time staff members from teaching, and as hospitals reduce special benefits, such as subsidized office space, to full-time staff members, the full-time faculty is called on to do more teaching without compensation. As a result, physicians may view teaching as a burden or an unreimbursed service rather than as a privilege, a mark of recognition for excellence, and a pleasure.

This study shows that faculty members in our department contributed substantially through unreimbursed teaching time to the training programs of both the medical school and the hospital that make up our academic health center. In a cost-competitive health care environment with a truly level playing field, there would be direct payment to faculty members for time spent in teaching. However, the financial pressure on hospitals, medical schools, and clinical departments, coupled with the proposed reduction in Medicare payments for the training of physicians,<sup>4</sup> make this unlikely. The sense of privilege and the personal rewards of teaching will remain important, but uncompensated teaching time is likely to become an issue in an era in which financial compensation for physicians' activities is more closely watched.

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