

Special Article

VIEWS OF MANAGED CARE

A Survey of Students, Residents, Faculty, and Deans at Medical Schools in the United States

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ABSTRACT

Background and Methods Views of managed care among academic physicians and medical students in the United States are not well known. In 1997, we conducted a telephone survey of a national sample of medical students (506 respondents), residents (494), faculty members (728), department chairs (186), directors of residency training in internal medicine and pediatrics (143), and deans (105) at U.S. medical schools to determine their experiences in and perspectives on managed care. The overall rate of response was 80.1 percent.

Results Respondents rated their attitudes toward managed care on a 0-to-10 scale, with 0 defined as "as negative as possible" and 10 as "as positive as possible." The expressed attitudes toward managed care were negative, ranging from a low mean (\pm SD) score of 3.9 ± 1.7 for residents to a high of 5.0 ± 1.3 for deans. When asked about specific aspects of care, fee-for-service medicine was rated better than managed care in terms of access (by 80.2 percent of respondents), minimizing ethical conflicts (74.8 percent), and the quality of the doctor-patient relationship (70.6 percent). With respect to the continuity of care, 52.0 percent of respondents preferred fee-for-service medicine, and 29.3 percent preferred managed care. For care at the end of life, 49.1 percent preferred fee-for-service medicine, and 20.5 percent preferred managed care. With respect to care for patients with chronic illness, 41.8 percent preferred fee-for-service care, and 30.8 percent preferred managed care. Faculty members, residency-training directors, and department chairs responded that managed care had reduced the time they had available for research (63.1 percent agreed) and teaching (58.9 percent) and had reduced their income (55.8 percent). Overall, 46.6 percent of faculty members, 26.7 percent of residency-training directors, and 42.7 percent of department chairs reported that the message they delivered to students about managed care was negative.

Conclusions Negative views of managed care are widespread among medical students, residents, faculty members, and medical school deans. (N Engl J Med 1999;340:928-36.)

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MANAGED care, the dominant force in health care delivery in the United States,^{1,2} is shaping the educational experiences of medical students and residents.³⁻⁶ Faculty members, as the chief transmitters of attitudes, knowledge, and values about the practice of medicine, have a critical role in developing the culture in which students and residents are socialized.^{7,8} Earlier studies suggest that competitiveness in health care markets may hinder the capacity of faculty members to conduct academic research and may discourage collegial relations.^{9,10} The faculty's experiences with, and attitudes toward, managed care are likely to influence students' and residents' views of managed care.

Medical students and residents will need special knowledge and skills to practice in a managed-care environment.¹¹ Little is known, however, about their views of managed care and how well they believe their experiences in medical school and residency are preparing them for practice in that setting.¹²⁻¹⁴ We surveyed a national sample of students, residents, faculty members, directors of residency training, department chairs, and deans at U.S. medical schools to examine their views of managed care.

METHODS**Study Sample and Data Collection**

We used the master files of the American Medical Association and the Association of American Colleges to draw stratified probability samples of first-year and fourth-year medical students, residents in their third postgraduate year (excluding graduates of foreign medical schools), full-time clinical faculty members from all specialties, directors of residency training in internal medicine and pediatrics, department chairs, and medical

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TABLE 1. POPULATION SIZE, SAMPLE SIZE, AND RESPONSE RATE ACCORDING TO ACADEMIC GROUP.

ACADEMIC GROUP	TOTAL POPULATION*	SAMPLE SIZE	NO. OF RESPONDENTS	RESPONSE RATE %
First-year medical students	15,889	324	287	88.6
Fourth-year medical students	15,298	253	219	86.6
Residents in post-graduate year 3†	12,571	632	494	78.2
Clinical faculty members	71,160	949	728	76.7
Directors of residency training‡	235	181	143	79.0
Department chairs§	807	240	186	77.5
Deans	121	121	105	86.8
Total	116,081	2700	2162	80.1

*Totals are the total numbers in each academic group at 121 U.S. four-year medical schools accredited by the Liaison Committee on Medical Education.

†Graduates of foreign medical schools were excluded.

‡The sampling frame included directors of residency-training programs in internal medicine and pediatrics that have major affiliations with the sponsoring medical school. In cases of multiple affiliated residency-training programs, we selected the director of the largest program.

§All chairs of departments of internal medicine, pediatrics, and family medicine at each medical school and a random sample of chairs of the departments of anesthesiology, neurology, obstetrics and gynecology, ophthalmology, pathology, psychiatry, radiology, and surgery at each school were included.

school deans. We oversampled specific target groups (e.g., primary care faculty members) in order to ensure their adequate representation in the sample. Between March and August 1997, the Center for Survey Research of the University of Massachusetts, Boston, conducted confidential 20-minute telephone interviews with 2162 participants. The study was approved by the Human Studies Committee of Harvard Pilgrim Health Care.

For each academic group, the size of the population from which the sample was drawn, the size of the sample, and number of respondents are shown in Table 1. Response rates varied from 76.7 to 88.6 percent among subgroups; the overall rate was 80.1 percent. We defined primary care respondents as those who practiced or intended to practice in the area of family medicine, general internal medicine, general pediatrics, or geriatrics. We defined specialists as those who practiced or intended to practice any other specialty or subspecialty, or whose practice involved a combination of primary care and a specialty or subspecialty.

Development of the Survey

The questionnaires (available elsewhere*) were developed on the basis of a systematic review of the literature and the observations of focus groups of students, residents, faculty members, deans, department chairs, and directors of residency training in areas of the United States with high, intermediate, and low levels of market penetration by managed care. Participants in the focus groups were broadly divergent in their understanding of the term "managed care," both within and among geographic regions. Because of the difficulty of arriving at a common definition, and because

*See NAPS document no. 05506 for 89 pages of supplementary material. To order, contact NAPS, c/o Microfiche Publications, 248 Hempstead Turnpike, West Hempstead, NY 11552.

of the heterogeneity of managed-care organizations and programs in different areas, we allowed respondents to use their own experience and definitions of managed care in answering our questions.

We carried out two pilot studies with a total of 86 participants from each of the study populations and modified the questionnaires on the basis of the results. The final questionnaires included items designed to measure elements of academic culture in relation to managed care (outlined in the Appendix). To minimize the length of the questionnaires and the time necessary to complete the survey, we excluded questions to which the responses varied little during preliminary testing. A majority of the respondents in the pilot studies considered managed care better than fee-for-service care in terms of preventive services, the coordination of care, cost effectiveness, and avoidance of unnecessary care. Similarly, a majority of respondents in the pilot surveys found fee-for-service care superior to managed care in terms of access to surgical care, tests, procedures, and "high-technology" experimental therapies.

Statistical Analysis

Because we oversampled several subgroups of respondents and sampled a different fraction of the total population of each academic group, we used sampling weights to adjust for differences in the probability of selection in all analyses. All estimated means and percentages are weighted statistics and therefore represent estimates of the responses of the national populations of students, residents, faculty members, medical school deans, department chairs, and directors of residency training in internal medicine and pediatrics within U.S. academic health centers. To estimate the responses and their standard errors appropriately,^{15,16} we used a specialized statistical program, SUDAAN,¹⁷ which is designed for the analysis of complex probability-sample data.

For binary, nominal, and ordinal outcomes, we constructed a series of logistic-regression, multinomial logistic-regression, and ordinal logistic-regression models, respectively, to assess whether variation in the responses was associated with the academic group or a specialty orientation (the main effect), and whether the effect of specialty orientation differed among academic groups (an interaction effect).^{18,19} In cases in which the assumptions for ordinal logistic regression were violated, we refitted the models using the more generalized, nonordered, multinomial logit model.²⁰ For continuous outcomes, we fitted linear regression models to test for variation among academic groups or according to specialty orientation.²¹ Three groups were not included in analyses according to specialty orientation: deans, because the number of deans in primary care was too small for analysis; directors of residency training, because there were no specialists in this group; and students and residents (51 and 14, respectively) who were undecided about their career plans and therefore could not be categorized according to specialty orientation.

We also examined whether variations in the perceived effects of managed care on the academic mission and professional life of the faculty were related to the respondents' level of exposure to managed care, as measured by physicians' reports of the proportion of their patients who were enrolled in managed care and by the competitiveness of the managed-care market in each respondent's geographic area.^{10,22} The index of competitiveness we used was that of the University HealthSystem Consortium, which classified the competitiveness of U.S. health care markets on the basis of the number of health maintenance organizations (HMOs) with more than 100,000 enrollees, the percentage of all enrollees in the three largest HMOs, hospital occupancy rates, the average number of hospital days per 1000 population, the percentage of specialists who were paid on a capitated basis, the percentage of Medicare and Medicaid beneficiaries enrolled in HMOs, and the average premium for a commercial HMO in 1995.^{10,22}

To test for differences among items assessed for individual subjects, we used repeated-measures analysis of variance. We used adjusted Wald F statistics to test hypotheses, because of the stratification and unequal sampling fractions.¹⁷ All reported P values are two-tailed. To adjust for the increased risk of a type I error re-

sulting from the multiple tests of hypotheses, we used $P < 0.01$ as the criterion for statistical significance.

RESULTS

Attitudes toward Managed Care

In general, students, residents, faculty members, directors of residency training, department chairs, and deans reported negative attitudes toward managed care. On a 0-to-10 scale (with 0 indicating an attitude as negative as possible and 10 an attitude as positive as possible), mean (\pm SD) scores for the respondents' attitudes toward managed care ranged from a low of 3.9 ± 1.7 for residents to a high of 5.0 ± 1.3 for deans. Primary care respondents reported less negative feelings about managed care than specialists (mean score, 4.6 vs. 4.0; $P < 0.001$).

Table 2 shows respondents' comparisons of managed-care with fee-for-service delivery systems with regard to access to physicians, the presence of ethical conflicts, the quality of the doctor-patient relationship, continuity of care, the quality of end-of-life care, and the management of chronic illness. In terms of all these features, a higher proportion of respondents rated fee-for-service systems superior to managed care. The highest ratings for managed care were for management of chronic illness and continuity of care, with 30.8 percent and 29.3 percent of respondents, respectively, identifying managed care as the better system. In general, specialists were more likely than primary care respondents to prefer fee-for-service medicine to managed care on most measured dimensions of clinical care. Responses also varied according to academic group, with faculty members and department chairs expressing the greatest preference for fee-for-service medicine over managed care. There was an interaction effect in several of the models, indicating that department chairs who were specialists were the most likely of the subgroups to favor fee-for-service medicine over managed care.

All groups expressed a preference for a single-payer health care system over both managed-care and fee-for-service systems. Overall, 57.1 percent thought that a single-payer system with universal coverage was the best health care system for the most people for a fixed amount of money. A total of 21.7 percent favored managed care, and 18.7 percent preferred a fee-for-service system (2.5 percent did not state a preference).

Effects of Managed Care on Academic Medicine

A total of 63.1 percent of faculty members, directors of residency training, and department chairs and 96.2 percent of deans thought that managed care had decreased faculty members' time for research (either a lot or a little) (Table 3). Similarly, 58.9 percent of faculty members, directors of residency training, and department chairs and 93.4 per-

cent of deans reported that teaching time had been reduced by managed care. A total of 26.9 percent of faculty members, directors of residency training, and department chairs and 52.6 percent of deans believed that managed care was decreasing care for traditionally underserved groups of patients. As compared with faculty members in primary care, specialists were nearly twice as likely to report "a lot" of (as compared with little or no) reduction in research time because of managed care (34.4 percent vs. 20.9 percent; odds ratio, 1.8; 95 percent confidence interval, 1.2 to 2.9).

Effects of Managed Care on the Quality of Professional Life

More than half of faculty members, directors of residency training, and department chairs reported that their income had decreased a lot or a little (reported by 55.8 percent of these respondents), that job security had diminished (54.1 percent), and that collegial relations had deteriorated (52.2 percent) as a result of managed care (Table 3). Similarly, 79.1 percent of deans reported a decrease in faculty members' income; 81.9 percent reported a decline in job security for faculty members; and 61.9 percent reported poorer collegial relations among the faculty. Specialists were more likely than those in primary care to report "a lot" of (as compared with little or no) decline in income (19.3 percent vs. 6.5 percent; odds ratio, 2.8; 95 percent confidence interval, 1.6 to 4.6). Results also varied according to academic group, with directors of residency training less likely to note an effect of managed care than faculty members and department chairs (odds ratio, 0.28; 95 percent confidence interval, 0.14 to 0.59).

Exposure to Managed Care and Perceptions of Its Effects

Faculty members, directors of residency training, and department chairs who cared for higher proportions of patients enrolled in managed-care plans were more likely to report that they had decreased time available for research and a diminished level of job security (data not shown). For example, our models estimated that faculty members who reported that 75 percent of their patients were enrolled in managed-care plans were 1.6 times as likely to report that their job security had decreased "a lot" (rather than "a little" or "not at all") as a result of managed care than were faculty members who reported that 25 percent of their patients were enrolled in managed-care plans.

Deans' Views of Managed Care

More than two thirds of deans (72.5 percent) reported that there had been a decline in their schools' overall budgets for medical education as a result of managed care; 85.9 percent of deans perceived resistance from managed-care organizations to collab-

TABLE 2. RATINGS OF FEE-FOR-SERVICE AND MANAGED-CARE SYSTEMS, ACCORDING TO ACADEMIC GROUP AND ASPECT OF CARE.*

ASPECT OF CARE AND RATING	ALL RESPONDENTS (N=2162)	Yr-1 MEDICAL STUDENTS (N=287)		Yr-4 MEDICAL STUDENTS (N=219)		RESIDENT† (N=290)		FACULTY (N=131)		RESIDENCY-TRAINING DIRECTORS (N=143)		DEPARTMENT CHAIRS (N=44)		MEDICAL SCHOOL DEANS (N=105)		P VALUE‡	
		PRIMARY CARE (N=190)	SPECIALTY (N=290)	PRIMARY CARE (N=290)	SPECIALTY (N=219)	PRIMARY CARE (N=131)	SPECIALTY (N=597)	PRIMARY CARE (N=44)	SPECIALTY (N=142)	PRIMARY CARE VS. SPECIALTY ORIENTATION	SPECIALTY VS. ACADEMIC GROUP	PRIMARY CARE VS. SPECIALTY ORIENTATION	SPECIALTY VS. ACADEMIC GROUP				
percentage of respondents																	
Access to care																	
Fee-for-service better	80.2	72.2	88.5	66.8	83.8	69.2	39.8	91.8	70.3	<0.001	<0.001	<0.001	<0.001				
No difference	10.4	19.1	6.9	24.0	8.4	20.2	33.8	4.2	19.2								
Managed care better	7.5	8.6	4.1	7.8	4.9	10.6	25.3	3.4	8.6								
Minimizing ethical conflicts																	
Fee-for-service better	74.8	85.8	73.6	65.3	74.0	82.8	53.6	71.7	68.4	0.90	0.005	0.006	0.006				
No difference	18.2	11.3	16.1	29.6	19.1	13.7	32.1	25.9	26.8								
Managed care better	5.4	2.9	9.8	2.7	4.4	3.5	13.2	2.2	3.8								
Doctor-patient relationship																	
Fee-for-service better	70.6	60.4	79.0	63.4	71.5	65.9	55.0	85.9	73.4	0.009	<0.001	<0.001	0.004				
No difference	23.0	35.7	18.4	29.8	22.1	33.4	37.8	13.6	23.7								
Managed care better	4.0	3.9	1.3	5.4	3.0	0.7	6.2	0.2	2.0								
Continuity of care																	
Fee-for-service better	52.0	41.2	60.5	40.0	59.3	38.0	30.4	58.2	21.8	<0.001	<0.001	<0.001	0.47				
No difference	16.6	12.8	16.6	23.4	15.6	33.6	18.2	14.0	35.1								
Managed care better	29.3	45.4	21.6	35.2	22.0	28.3	50.3	27.8	42.1								
Care at the end of life																	
Fee-for-service better	49.1	38.8	51.5	38.1	48.6	44.7	20.1	40.9	37.0	0.04	0.003	0.87	0.87				
No difference	27.8	20.7	26.6	41.2	28.8	33.0	48.1	27.0	41.9								
Managed care better	20.5	23.2	20.2	19.3	18.9	21.6	30.7	31.9	20.1								
Care of chronic illness																	
Fee-for-service better	41.8	37.2	39.8	29.7	47.0	41.3	11.4	35.2	23.8	0.008	<0.001	<0.001	0.25				
No difference	25.2	10.6	30.2	39.2	27.7	27.6	44.6	30.6	37.9								
Managed care better	30.8	52.8	29.3	29.6	21.7	30.3	42.9	33.9	37.4								

*Because of missing values, percentages may not total 100. "Specialty" indicates physicians who practiced or intended to practice in a specialty, a subspecialty, or a specialty combined with primary care.

†Fourteen residents who were undecided about their intended specialty were excluded from tests of difference according to specialty orientation.

‡P values are for the comparison of the responses according to the factor or factors indicated.

TABLE 3. REPORTED EFFECTS OF MANAGED CARE ON ACADEMIC MEDICINE, ACCORDING TO ACADEMIC GROUP.*

VARIABLE	FACULTY		RESIDENCY- TRAINING DIRECTORS (N=143)	DEPARTMENT CHAIRS		FACULTY, RESIDENCY- TRAINING DIRECTORS, AND DEPARTMENT CHAIRS (N=1057)	DEANS (N=105)	P VALUE†	
	PRIMARY CARE (N=131)	SPECIALTY (N=597)		PRIMARY CARE (N=44)	SPECIALTY (N=142)			PRIMARY CARE VS. SPECIALTY ORIENTATION	ACADEMIC GROUP
percentage of respondents									
Effects on academic mission									
Time for research decreased								0.008	0.05
A lot	20.9	34.4	22.8	26.1	31.3	33.0	60.1		
A little	27.3	30.2	31.4	25.3	39.6	30.1	36.1		
Not at all	44.5	33.0	43.5	48.5	28.8	34.2	3.8		
Time for teaching decreased								0.34	0.47
A lot	20.0	23.5	16.2	14.2	21.0	23.0	34.4		
A little	35.1	35.9	40.7	33.2	35.7	35.9	59.0		
Not at all	44.6	38.8	42.4	52.6	43.2	39.5	6.6		
Care of patients from underserved groups decreased								0.09	0.02
A lot	7.2	9.3	5.6	7.1	19.2	9.2	20.2		
A little	11.5	18.6	10.5	12.5	13.0	17.7	32.4		
Not at all	79.5	69.1	83.2	79.5	67.7	70.2	44.6		
Effects on quality of professional life									
Income decreased								<0.001	<0.001
A lot	6.5	19.3	7.2	0.9	14.0	17.8	22.9		
A little	29.0	38.7	31.8	13.1	58.8	38.0	56.2		
Not at all	63.6	39.8	59.7	86.0	27.2	42.2	20.0		
Job security decreased								0.11	0.07
A lot	8.3	19.4	7.1	2.4	16.2	18.2	21.9		
A little	42.5	35.3	42.0	27.3	26.1	35.9	60.0		
Not at all	49.2	43.6	50.3	70.4	57.7	44.4	17.1		
Quality of collegial relations diminished								0.99	0.30
A lot	12.6	13.7	9.0	11.1	18.2	13.6	17.1		
A little	41.6	38.1	42.0	51.7	43.1	38.6	44.8		
Not at all	45.8	45.7	48.3	37.2	38.7	45.6	38.1		

*The questions for deans were stated to refer to their institutions; questions for faculty members, residency-training directors, and department chairs were stated to refer to the effects of managed care on them individually. Because of missing data, percentages may not total 100. "Specialty" indicates physicians who practiced in a specialty, a subspecialty, or a specialty combined with primary care.

†P values are for the comparison of the responses according to the factor indicated. The addition of an interaction term to each of the models had no significant effect.

oration with medical schools in medical education, with 62.8 percent reporting "a lot" of resistance. The level of competitiveness of the local managed-care market was unrelated to deans' reports of the effects of managed care (data not shown).

The Message about Managed Care

Overall, 46.6 percent of all faculty members, 26.7 percent of directors of residency training in internal medicine and pediatrics, and 42.7 percent of department chairs reported that the message they delivered to students about managed care was negative. In contrast, only 16.2 percent of deans said that their schools conveyed a negative message about managed care. Primary care respondents were more likely than specialists to report that they conveyed a positive message about managed care (26.0 percent vs. 10.6 percent, $P < 0.001$).

Influences on Students' and Residents' Attitudes toward Managed Care

Table 4 shows students' and residents' perceptions of the influences on their attitudes toward managed care. Overall, the three most frequently reported influences were coursework or the medical literature (64.8 percent), primary care faculty members (60.8 percent), and specialist faculty members (58.7 percent). Among students and residents reporting those influences, more than 70 percent described the influences as negative. Overall, 55.8 percent of students and residents identified no positive influences on their attitudes toward managed care.

Exposure to Managed Care

Fourth-year medical students estimated that they spent a mean of 4.2 ± 6.6 percent of their clerkship time (range, 0 to 30 percent) in HMOs or man-

TABLE 4. STUDENTS' AND RESIDENTS' REPORT OF INFLUENCES ON THEIR ATTITUDES TOWARD MANAGED CARE.*

VARIABLE	ALL STUDENTS AND RESIDENTS (N=1000)	YR-1 MEDICAL STUDENTS (N=287)	YR-4 MEDICAL STUDENTS (N=219)	RESIDENTS (N=494)	P VALUE†	
					PRIMARY CARE VS. SPECIALTY ORIENTATION	ACADEMIC GROUP
percentage of respondents						
Academic influences						
Coursework or the medical literature					0.91	0.004
Any influence	64.8	76.1	60.1	57.3		
Positive influence	26.7	33.3	25.8	17.7		
Negative influence	72.8	65.9	74.2	81.6		
Primary care faculty					0.98	0.06
Any influence	60.8	51.8	75.8	53.8		
Positive influence	25.4	29.6	26.7	18.8		
Negative influence	74.2	69.2	73.3	81.1		
Specialty faculty					0.74	<0.001
Any influence	58.7	28.6	74.3	75.2		
Positive influence	3.7	12.5	0.5	3.7		
Negative influence	96.1	87.5	99.5	95.7		
Peers in program					0.05	0.01
Any influence	53.4	47.8	49.9	63.8		
Positive influence	12.0	20.2	6.8	9.6		
Negative influence	87.8	79.8	93.2	89.8		
Work experience					0.12	<0.001
Any influence	42.1	29.6	45.0	53.1		
Positive influence	29.4	38.3	36.4	16.8		
Negative influence	69.3	61.7	60.9	82.3		
Residents					0.42	0.32
Any influence	37.5	18.8	56.0	—		
Positive influence	7.2	3.1	8.5	—		
Negative influence	92.8	96.9	91.5	—		
Nonacademic influences						
Media					0.29	0.08
Any influence	55.2	57.7	54.7	52.9		
Positive influence	12.6	15.2	18.2	9.1		
Negative influence	86.9	83.8	80.4	90.9		
Experience as a patient‡					0.04	0.51
Any influence	48.5	52.2	46.7	46.5		
Positive influence	21.5	20.5	25.0	18.6		
Negative influence	78.5	79.5	75.0	81.4		
Physician relatives					0.03	0.68
Any influence	27.0	31.1	26.3	23.1		
Positive influence	8.8	9.8	6.3	10.6		
Negative influence	90.4	88.3	93.7	89.4		
Summary score§						
Any positive influence	44.2	51.6	48.8	30.4	—	—
No positive influence	55.8	48.4	51.2	69.6		

*Students and residents were asked whether a variable had any influence on them, and if so whether it was a positive or a negative influence. Because of missing values, percentages for positive and negative influences may not total 100.

†P values are for the comparison of the positive with the negative influences according to the factor indicated. The addition of an interaction term to each of these models had no significant effect. Students and residents who were undecided about their future career plans (total, 65) were excluded from tests of differences according to specialty orientation.

‡We asked respondents whether they or a family member had had experience as a patient that influenced their attitudes.

§This dichotomous variable indicated whether or not respondents reported a positive influence on at least one of the nine items measuring influence.

aged-care settings, and residents reported that they spent 5.8 ± 18.4 percent of their clinical time (range, 0 to 100 percent) in these settings. On a 0-to-10 scale, with 0 indicating no exposure and 10 extremely thorough exposure, fourth-year students and residents rated the extent of their exposure to managed care at 3.6 ± 2.6 and 4.4 ± 3.3 , respectively.

A total of 75.4 percent of deans reported that their medical schools offered managed-care courses or lectures to their students; 65.8 percent required students to take some managed-care courses. Overall, 49.5 percent of deans reported that their medical schools offered clinical experience in managed-care settings; 11.5 percent required students to complete a clinical rotation in a managed-care system.

Preparation for Managed-Care Practice

Deans rated their graduates' preparation for practice in managed-care settings at 5.8 ± 1.9 on a 0-to-10 scale, with 0 indicating a complete lack of preparation and 10 as thoroughly prepared as possible. Using the same scale, fourth-year students' ratings of their preparation for managed-care practice (6.3 ± 2.1) were lower than residents' ratings of their own preparation (6.8 ± 2.2 , $P < 0.01$). For purposes of comparison, fourth-year students' ratings of their preparation to communicate with patients (8.7 ± 1.2) and to analyze the medical literature critically (7.4 ± 2.1) were significantly higher than their ratings of their preparation for practice in managed-care systems ($P < 0.001$). Similarly, residents' ratings of their preparation for communicating with patients (9.0 ± 1.3) and analyzing the medical literature critically (7.8 ± 1.8) were also higher than their ratings of their preparation for managed-care practice ($P < 0.001$). Fourth-year students and residents who reported any exposure to managed-care practice rated themselves better prepared for practice in managed-care systems than did those with no exposure (7.1 vs. 6.2, $P < 0.001$). Among faculty members, ratings of their own preparation for practice in managed-care settings differed according to their specialty orientation. Primary care faculty members and department chairs reported better preparation for practice in managed care than their specialist counterparts (7.4 vs. 6.1, $P < 0.001$).

Knowledge of Managed Care

On a 0-to-10 scale, with 0 indicating almost no knowledge and 10 an extremely high level of knowledge, fourth-year students and residents rated their knowledge of managed care at 6.0 ± 2.7 on a local level and 5.5 ± 2.4 on a national level. As compared with fourth-year students and residents who reported spending no clinical time in managed-care settings, those who reported any clinical training in managed-care settings reported significantly higher levels of knowledge of local managed-care plans (6.7

vs. 5.5, $P < 0.001$) and a trend toward higher levels of knowledge of managed care nationally (5.7 vs. 5.3, $P = 0.01$). Faculty members' scores for their own knowledge of local and national managed care were 6.5 ± 3.0 and 5.8 ± 2.7 , respectively.

DISCUSSION

This 1997 study of a national sample of medical school students, residents, faculty members, and deans documents widespread negative views about the effect of managed care on clinical care, teaching, research, and the quality of professional life. Specialists, who in their practices have experienced the bulk of changes resulting from managed care,²³ were consistently more negative than their counterparts in primary care about the effects of managed care. Although we found no consistent association between the competitiveness of the local managed-care market and the variables we measured, faculty members who cared for more patients enrolled in managed-care plans described more adverse effects on their teaching, research, and professional lives. Medical school deans appeared to be particularly negative about the effects of managed care.

Our data show that medical students and residents share the negative views toward managed care reported by faculty members and are heavily influenced by the faculty in developing their opinions. Students and residents confirmed that many of the messages they receive from their teachers about managed care are negative. Although students have some exposure to managed care in the medical school curriculum, both students and residents reported little personal experience with managed care in their clinical training.

Several limitations must be considered in interpreting these results. First, this study was undertaken to ascertain perceptions of managed care among students, residents, faculty members, and deans, because the reality of managed care differs from organization to organization and from city to city. Perceptions may be more important than actual experiences, since they create the culture and shape the discourse, expectations, and experiences of physicians and trainees in academic health care centers. Second, we did not define managed care for respondents and thus do not know how respondents conceived of managed care when answering survey questions. For example, in reporting exposure to managed care, students and residents may have considered only outpatient rotations in HMOs as experiences with managed care, even though many of their hospitalized patients may have been insured by managed-care organizations. Similarly, respondents may not have considered courses in health economics or health policy as courses related to managed care, even though such courses included discussions of managed-care systems. Third, although a majority of respondents favored a single-payer system of health care with uni-

versal coverage, the survey did not specify what delivery structure or financing method would underlie such a system. Finally, we excluded questions on attitudes toward managed care when there was agreement among respondents in a pilot survey that either managed care or fee-for-service care was clearly better than the other system. This method led to the exclusion of some items that favored managed care and some that favored fee-for-service medicine.

The negative views of specialist faculty members toward managed care might be viewed as arising from its adverse effects on their incomes and job security.²³ However, primary care faculty members, who are more likely to have benefited from changes related to managed care, also expressed reservations about its effects.

The deficiencies identified by the respondents in their preparation for practice in a managed-care setting and the concern they expressed about the capacity of managed care to meet health care needs may be interpreted as indicating the need to improve medical education in and about managed care. This strategy, however, may be ineffective when faculty members view managed care as negatively as their responses to this survey suggest. The negative attitudes toward managed care, the lack of emphasis on education related to managed care, and the perceived effects of managed care on the mission of academic medical centers and on the lives of the faculty may indicate a more fundamental concern about managed care itself. From this perspective, the ap-

parent deficiencies in exposure to and preparation for managed-care practice may reflect reservations, resistance, or even frank opposition to managed care among faculty members and administrators at academic health centers.

In either case, a constructive strategy for supporting the education of students and residents and addressing the issues of concern to faculty members must be developed. Because negative attitudes toward managed care are pervasive within academic health centers, any efforts to address this problem must be made system-wide. Our study points to many opportunities for improving knowledge about and preparation for practice in the context of managed care on the part of students, residents, and faculty members. In addition, we believe that enhanced dialogue among public-policy experts, leaders of managed-care organizations, and leaders of academic health centers about how to provide high-quality care and improve medical education is an essential step in ensuring a well-prepared physician work force and supporting the missions of the academic health center in research, teaching, and clinical care.

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APPENDIX

AREAS INVESTIGATED IN OUR SURVEY OF ATTITUDES TOWARD MANAGED CARE.

AREA	QUESTIONS
Overall attitudes toward managed care Overall rating of managed care	Given the current mix of types of managed-care organizations, how would you rate your overall feelings about managed care? 0 is as negative as one's feelings can be, and 10 is as positive as one's feelings can be.
Comparison of managed care with fee-for-service care in terms of aspects of health care delivery	Think about "managed care" and "fee-for-service" as service-delivery prototypes. Would each of the following be better under managed care, better under fee-for-service, or would the model under which services are provided make no difference? Under which system would there be better management of chronic illness? better-quality end-of-life care? better continuity of care? a better-quality doctor-patient relationship? more ethical conflicts for physicians* easier access to one's physician?
Comparison of managed care, fee-for-service care, and single-payer systems	Which one of the following three structures would offer the best health care to the greatest number of people for a fixed amount of money? fee-for-service system in a competitive marketplace managed-care system in a competitive marketplace single-payer system with universal coverage
Effects of managed care on the mission of academic health centers	These questions are about the way managed care may be affecting your current work situation. Please state whether you are being affected a little, a lot, or not at all. † To what extent has your time available for research decreased because of managed care? has your time available for teaching decreased because of managed care? are you caring for fewer patients from underserved populations?
Effects of managed care on the professional life of faculty	To what extent (a little, a lot, or not at all) is your income declining because of managed care? do you feel a diminished level of job security because of managed care? has managed care diminished the quality of your collegial relations?

APPENDIX

CONTINUED.

AREA	QUESTIONS
Deans' views of managed care	To what degree (a little, a lot, or not at all)
Effect on budget	has there been a decrease in the global budget for medical education because of managed care?
Resistance to collaboration	is there resistance among managed-care organizations to collaborating in the education of medical students?
Faculty appointments	has your institution made faculty appointments available to physicians at affiliated managed-care plans?
Faculty and deans' messages about managed care	Would you describe the messages you convey to medical students about managed care as very positive, somewhat positive, neither positive nor negative, somewhat negative, or very negative?
Influences on students' and residents' attitudes toward managed care	Here are some factors that may contribute to your opinion about managed care. For each, state whether you feel the factor has influenced your opinion. If yes, would you say the influence from that source was very positive, somewhat positive, somewhat negative, or very negative? Has your opinion been influenced by
Academic influences	coursework, journal articles, or professional publications?
	primary care faculty?
	specialty faculty?
	residents?
	your peers in your postgraduate or residency program?
	experiences working in a managed-care setting?
Nonacademic influences	a family or personal experience as a patient in a managed-care situation?
	presentations about managed care on television or in other media?
	reported experiences of relatives who are physicians?
Exposure to managed care	
Global rating	Using a 0-to-10 scale, on which 0 represents almost no exposure to managed care and 10 represents extremely thorough exposure, how would you rate your exposure to managed care?
Clinical time in managed-care setting	What percentage of your total clinical clerkship and elective time has been spent in health maintenance organizations (HMOs) or managed-care settings?
Formal managed-care curriculum†	Are formal lectures or courses on managed care offered at your institution? If yes, are any of them required for students, or are they all electives?
	Does your medical school offer clinical experiences for students in group- or staff-model HMOs? If yes, is this a required experience for all students, an elective for some students, or one of several clinical sites for a required rotation?
Preparation for managed-care practice	On a 0-to-10 scale, on which 0 is completely unprepared and 10 is as prepared as one can be, how well prepared do you feel overall to practice in a managed-care setting?§
Knowledge of managed care	On a 0-to-10 scale, on which 0 represents almost no knowledge and 10 represents an extremely high level of knowledge, rate your knowledge of managed care (1) on a national level and (2) in your local environment.

*This item was worded in the opposite way in the text and Table 2, as "minimizing ethical conflicts," to be consistent with other questions about aspects of care; responses were adjusted to reflect the change in wording.

†Deans were asked to what extent managed care had affected the clinical faculty at their institutions in terms of each of these items.

‡Only deans were asked about this area.

§Deans were asked how well prepared they felt the graduates from their medical school were to practice in a managed-care setting.

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