RESEARCH REPORT

Clerkship Directors' Perceptions of the Effects of Managed Care on Medical Students' Education

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ABSTRACT

Purpose. Little is known about the effect of managed care on medical students' education. Because clerkship directors (CDs) are especially well positioned to observe any changes, this study surveyed CDs from six medical specialties about their perceptions of the effects of managed care on medical students' education.

Method. Anonymous questionnaires were mailed to 808 CDs from departments of six medical specialties at 125 U.S. allopathic medical schools between October 1997 and March 1998. Among other questions, respondents were asked whether they had observed changes in 19 different aspects of medical students' education, whether these changes were beneficial or detrimental, and whether they believed the changes were due to managed care and/or to other factors. Results were analyzed to determine perceptions of the overall magnitude and source(s) of changes, the perceived positive versus negative effect of managed care, and whether these outcomes were statistically associated with the perceived degree of managed care's market penetration.

Results. Five hundred questionnaires (61.9%) were returned. For full-time and voluntary faculty teaching, faculty availability for educational administration, directors' clinical responsibilities, and quality of professional life, the most common response was that managed care had an adverse effect. For faculty's enthusiasm for teaching, directors' administrative and educational duties, and clerkship training sites, the second most common response after "not changed" was that managed care had a negative effect. The majority of respondents held negative opinions of managed care and thought that medical students did not understand it.

Conclusions. CDs in six medical specialties perceived that managed care has negatively affected medical students' education. These perceptions may influence medical students' education. Measures must be taken to ensure excellent education through adequate resources and training in the context of high-quality medical care.

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For an article and two research reports on related topics, see pages 1069, 1121, and 1128.

The potential effects on medical students' education of managed care's expansion into academic medical centers (AMCs) have been addressed by a number of authors.[1] First, proposed revisions to the curriculum to increase its relevance to practice in the managed care environment emphasized health system financing and delivery, population and evidence-based medicine, quality of care and outcomes assessments, cost-effective management of resources, communication skills, working in a team, professional ethics, prevention, and training in ambulatory care sites.[2–4]

Second, changes in the inpatient environment initiated by the advent of diagnosis-related groups (DRGs) and accelerated by managed care have made it less suitable for training students.[5,6] Pa-

tients' increased acuity and decreased lengths of stay greatly diminish the traditional educational advantages of continuity of patient care, exposure to patients over a substantial part of the natural history of their illnesses, working with multidisciplinary teams, observation of the details of clinical decision making, development of case formulations, and direct patient responsibility under close supervision. Changes in patient volume and mix due to the diversion of healthier, younger, and wealthier patients away from AMCs, the retention of higher-risk patients, as well as decreased total patient volumes, may also pose problems for educating medical students.[7–9]

Third, educational implications of increased emphasis on ambulatory education, including perceived high costs, have been addressed by a number of authors.[10–13] Clerkships in outpatient settings often suffer from a deficiency in hands-on patient care experiences as well as cursory teaching, clinical supervision, and feedback, which are in turn related to the pressure to see patients quickly.[5,11–13]

Fourth, the erosion of clinical revenues at AMCs, most pronounced in medical schools located in areas of highest managed care penetration,[13] has reduced their ability to cross-subsidize research, teaching, and patient care.[6,7,13] Undergraduate medical education is financed by faculty practice income, state subsidies, private endowments, and tuition, as well as volunteer faculty's contributions.[8,13,14] Tuition is less than 5% of medical school income and a fraction of total educational resource costs, estimated at $72,000–$93,000 per student, per year.[6,15] The third-year clerkships are by far the most expensive part of medical students' education.[16]

Fifth, demands for faculty to maintain revenues by increasing patient volume, the intensified clinical burden of sicker patients, and increased time spent in documentation and utilization review are all factors that have been predicted to cause declines in faculty availability, morale, and willingness to teach students.[6,10,13,20] Teaching medical students is poorly compensated and is costly to faculty; teaching by volunteer faculty, in particular, is dependent on a "fragile social contract."[17–19] In addition, faculty hired primarily to do clinical work may not understand or support traditional academic functions such as research and teaching.[6,21]

Previous studies have demonstrated a significant association between degree of managed care penetration and adverse changes in faculty research activities.[21–23] Managed care's association with teaching is less researched. Campbell et al.[21] surveyed 3,394 life-science faculty members in the 50 universities that received the most NIH funding in 1993 and found that junior clinical research faculty in markets with high managed care penetration published fewer scientific articles, had more patient care responsibilities, and perceived lower levels of departmental cooperation and higher levels of conflict than did those in less competitive markets. Teaching activity by junior and senior medical school faculty was assessed by asking how many hours of student or postdoctoral contact per week that faculty member typically had in an academic year. There was no significant difference by market stage, which is the extent of managed care penetration, primarily by health maintenance organizations (HMO).[21] However, the crudity of this measure and the inclusion of nonclinical faculty, as well as postdoctoral and preclinical students, limits the applicability of this finding to clinical medical students' education. Simon et al.,[24] in a telephone survey of 2,700 medical students, residents, faculty members, residency directors, chairs, and deans, found that respondents perceived that managed care had reduced time available for teaching (58.9%) and research (63.1%). Faculty who cared for higher proportions of managed care patients were more likely to report diminished time for research and decreased job security.

Finally, concern has been expressed about the effect on students of increasingly commercial values in the culture of medicine and the possible exposure to training in an environment of decreased quality of care.[25–27] Simon et al.'s survey respondents perceived that care in managed care settings was poorer than that in fee-for-service settings in terms of the quality of the doctor–patient relationship, access to care, continuity of care, ethical conflicts, end-of-life care, and chronic illness care.[24] Published reports document the negative effect of managed care on quality of care for poor, sick, elderly, and psychiatrically ill patients[28–31]; on patients' satisfaction[32]; and on physician–patient relationships and ethical medical practice.[33] Simon et al.'s respondents expressed overall negative attitudes toward managed care and felt that it had damaged collegial relations.[24]

In an attempt to directly examine the effects shown by other analyses, our study ascertained clerkship directors' perceptions of the effects of managed care on their teaching programs. Because of their role in developing and overseeing clerkships, and their close contact with students and the local educational environment, clerkship directors are in a unique position to comment first-hand on the effects of managed care on clinical education in medical schools.

Method

The Alliance for Clinical Education (ACE) consists of leaders of seven medical education organizations: Association for Surgical Education (ASE), Association of Directors of Medical Student Education in Psychiatry (ADMSEP), Association of Professors of Gynecology/Obstetrics (APGO), Clerkship Directors in Internal Medicine (CDIM), Consortium of Neurology

Clerkship Directors (CNCD), Council on Medical Student Education in Pediatrics (COMSEP), and Society of Teachers of Family Medicine (STFM). ACE's mission is to foster collaboration across specialties to promote excellence in clinical education of medical students. Six of the ACE's organizations mailed an anonymous questionnaire to their members. For those medical schools with no member in that specialty's organization, a questionnaire was mailed to the specialty's clerkship director or director of medical student education.

One of us (ACB) reviewed the literature on the effects of managed care on medical students' education, interviewed ten ADMSEP members about their perceptions of managed care's effect on their programs, generated the first draft of the questionnaire, and solicited revisions from ACE member organizations. Each participating organization then mailed the questionnaire with an identical cover letter assuring respondent anonymity. The cover letter and questionnaire items were designed to express neither favorable nor unfavorable opinions of managed care.

The questionnaire had four sections: (1) questions about the respondents' administrative positions and their estimates of the amounts (none, small, moderate, or large) of managed care penetration at their schools' clinical sites; (2) 19 incomplete statements (see Table 1) about aspects of the clinical education program, for which respondents could choose more than one "answer" and could write additional comments; (3) a section asking the respondent to agree or disagree with each of nine opinion statements (see Table 2); and (4) an optional open-ended question: "What alterations have been made to your medical student educational programs to adjust or adapt to changes brought about by managed care (e.g., recruitment of interdisciplinary faculty as small-group leaders, additional lectures on managed care, and changes in clerkship sites)?"

Table 1

Perceptions of 500 U.S. Clerkship Directors on the Effects of Managed Care and Other Factors on Medical Students' Education, 1997–1998

Statement*	Increased Because of Managed Care No. (%)	Increased for Other Reasons No. (%)	Not Changed No. (%)	Decreased Because of Managed Care No. (%)	Decreased for Other Reasons No. (%)
Your faculty's participation in teaching medical students has	4 (0.8)	58 (12.1)	169 (35.3)	230 (48.0)	87 (18.2)
Your faculty's availability for educational administration has	3 (0.6)	19 (4.0)	147 (30.9)	259 (54.4)	107 (22.5)
Your faculty's enthusiasm for teaching students has	1 (2.0)	22 (4.6)	243 (51.1)	183 (38.4)	86 (18.1)
Your volunteer faculty's participation in teaching students has	7 (1.5)	48 (10.3)	180 (38.7)	204 (43.9)	72 (15.5)
Your medical school's attention to teaching has	8 (1.7)	160 (34.3)	211 (45.3)	80 (17.2)	34 (7.3)
Your program's use of individual supervision has	7 (1.5)	59 (12.6)	260 (55.4)	127 (27.1)	47 (10.0)
Your administrative and educational duties as a director have	78 (16.7)	194 (41.6)	213 (45.7)	12 (2.6)	4 (0.9)
Your morale and the quality of your professional life as a director have	2 (0.4)	43 (9.2)	171 (36.7)	185 (39.6)	115 (24.6)
Your clinical responsibilities have	215 (45.7)	142 (30.2)	130 (27.7)	11 (2.3)	25 (5.3)
The amount of research you conduct has	2 (0.4)	44 (9.2)	241 (50.5)	120 (25.2)	105 (22.0)
The amount of research conducted in your department has	3 (0.6)	142 (30.3)	158 (33.8)	123 (26.3)	74 (15.8)
The budget available for your medical student programs has	0	27 (5.7)	315 (66.7)	94 (19.9)	54 (11.4)
Your residents' participation in teaching has	13 (2.8)	55 (11.6)	339 (72.0)	41 (8.7)	35 (7.4)
Your residents' enthusiasm about teaching students has	0	55 (11.6)	361 (76.5)	26 (5.5)	33 (7.0)
Your program's use of small-group teaching formats has	6 (1.3)	136 (28.9)	267 (56.8)	46 (9.8)	29 (6.2)
Your program's use of lectures has	5 (1.1)	25 (5.3)	287 (61.2)	26 (5.5)	130 (27.7)
	Better Because of Managed Care	**Better for Other Reasons**	**Not Changed**	**Worse Because of Managed Care**	**Worse for Other Reasons**
Your clerkship training sites are	8 (1.7)	91 (19.2)	202 (42.5)	172 (36.2)	38 (8.0)
Your students' experiences in your clerkship are	6 (1.3)	160 (34.0)	146 (31.1)	146 (31.1)	54 (11.5)
Your students' experiences in your department's preclinical courses are	4 (0.9)	123 (27.5)	264 (59.1)	38 (8.5)	18 (4.0)

*For each item, respondents could choose more than one answer.

Table 2

Responses of 500 U.S. Clerkship Directors on Attitudes about Managed Care, 1997–1998

Statement	No. (%) Who Agreed
Managed care has slowed the rise in health care costs for employers and the government.	240 (50.1)
Managed care has made health care more like a commodity.	422 (88.1)
Managed care has reduced professionalism in medicine.	345 (72.0)
Managed care is improving the health of most Americans.	15 (3.1)
All Americans should have the right to have full access to good-quality health care.	405 (84.6)
Managed care has increased the cost-effectiveness of medical care.	132 (27.6)
The students in my medical school are more tolerant of managed care than I am.	188 (39.2)
The students in my medical school are more tolerant of managed care than my colleagues are.	211 (44.1)
The students in my school have a good understanding of the principles of managed care.	66 (13.8)

The goal of the mailings was to obtain a response from a clerkship director or director of medical student education in each of the six specialties at each of the 125 U.S. medical schools. Between October 1997 and March 1998, each organization conducted one (APGO, ASE, CDIM) or two (ADMSEP, COMSEP, CNCD) mailings. Except for ASE, each organization sent questionnaires to one individual per school. ASE sent questionnaires to each of its 646 members. Responses from ASE members were tallied only for those 127 ASE respondents who identified themselves as clerkship directors.

We entered the survey data into a statistical program and collated narrative comments. We analyzed replies only from respondents who perceived that their affiliated sites had managed care penetration.

To assess the construct validity of the 19 statements in the questionnaire's second section, we hypothesized that the more managed care penetration perceived by the respondent, the more likely he or she would be to discern that managed care was affecting clinical education (see Table 3). We combined responses "small" and "moderate" amounts (versus "large amount") to increase sample sizes for comparison, using chi-square statistics.

Results

The overall questionnaire response rate was 500/808 (61.9%). Response rates by specialty were as follows: (1) internal medicine, 65/123 (52.8%); (2) neurology, 59/125 (47.2%); (3) obstetrics–gynecology, 70/124 (56.5%); (4) pediatrics, 71/125 (56.8%); (5) psychiatry, 108/125 (86.4%); and (6) surgery, 127/186 (68.3%). For surgery, the response rate denominator was based on a prior survey of all 646 ASE members, 186 of whom identified themselves as clerkship directors. The mean number of years that respondents had held their current positions was 6.53 (SD = 5.67, n = 454).

Views about Managed Care's Effect

For faculty participation in teaching, faculty availability for education administration, volunteer faculty participation, director's morale, and amount of director's clinical responsibility, the most common response was that managed care was having a negative effect. For faculty enthusiasm for teaching, program's use of individual supervision, amount of the director's administrative and educational duties, amount of research directors conduct, and quality of clerkship sites, perceptions of managed care having a negative effect was the second most common response after "not changed." Relatively little effect was perceived on residents' participation in and enthusiasm for teaching. For all 19 statements, significantly more respondents (p = .000) perceived a negative rather than a positive effect of managed care. This finding held for separate analyses of each medical specialty's responses.

For 14 of 19 statements, statistically significant differences among specialties existed. Specialties in descending order of negative perceptions were psychiatrists (most likely to hold negative views), obstetrician–gynecologists, surgeons, internists, neurologists, and pediatricians (least likely to hold negative views). These differences will be the subject of another publication.

Nine statements had substantial numbers of responses (>25%) endorsing "for other reasons," suggesting the presence of other significant trends affecting the educational environment (see Table 1). Factors other than managed care appear to influence medical schools' attention to teaching, use of small-group teaching formats, students' experiences in the clerkship and in preclinical courses, as well as decreasing the use of lectures. This finding is consonant with mandates for increased use of small-group teaching and development of ambulatory clerkship sites.[16] Similarly, other factors appear to be important in increasing the directors' educational and administrative duties and clinical responsibilities, and in decreasing the amount of research conducted.

Table 3

Effect of Perceived Degree of Managed Care Penetration on 500 U.S. Clerkship Directors' Responses, 1997–1998

Statement	Small/Moderate Managed Care Penetration No. (%)	Large Managed Care Penetration No. (%)	Pearson Chi-square (df = 1)	*p* Value
Your faculty's participation in teaching has decreased because of managed care.	162 (44.5)	68 (59.1)	7.489	.007
Your faculty's availability for educational administration has decreased because of managed care.	178 (49.2)	81 (71.1)	16.734	.000
Your faculty's enthusiasm for teaching students has decreased because of managed care.	127 (35.0)	56 (49.6)	7.732	.005
Your volunteer faculty's participation in teaching has decreased because of managed care.	143 (40.5)	61 (54.5)	6.724	.010
Your medical school's attention to teaching has decreased because of managed care.	55 (15.5)	25 (22.5)	2.938	.086
Your program's use of individual supervision of students has decreased because of managed care.	83 (23.4)	44 (38.6)	10.118	.001
Your administrative and educational duties as a director have increased because of managed care.	51 (14.5)	27 (23.7)	5.225	.022
Your morale and the quality of your professional life as a director have decreased because of managed care.	123 (34.8)	62 (54.4)	13.756	.000
Your clinical responsibilities have increased because of managed care.	146 (41.2)	69 (59.5)	11.712	.001
The amount of research you conduct has decreased because of managed care.	79 (21.9)	41 (35.3)	8.449	.004
The amount of research conducted in your department has decreased because of managed care.	83 (23.5)	40 (34.8)	5.686	.017
The budget available for your medical student programs has decreased because of managed care.	59 (16.5)	35 (30.7)	10.965	.001
Your residents' participation in teaching has decreased because of managed care.	29 (8.1)	12 (10.3)	.546	.460
Your residents' enthusiasm for teaching has decreased because of managed care.	16 (4.5)	10 (8.6)	2.887	.089
Your program's use of small-group teaching formats has decreased because of managed care.	35 (9.9)	11 (9.6)	.008	.927
Your program's use of lectures has decreased because of managed care.	22 (6.2)	4 (3.5)	1.229	.268
Your clerkship training sites are worse because of managed care.	112 (31.1)	60 (52.2)	16.740	.000
Your students' experiences in your clerkship are worse because of managed care.	95 (26.8)	51 (44.3)	12.547	.000
Your students' experiences in your department's preclinical courses are worse because of managed care.	27 (7.9)	11 (10.4)	.615	.433

Effect of Degree of Managed Care Penetration

Of the 500 respondents, 23 (4.6%) perceived no managed care penetration at their clinical sites, 364 (72.8%) perceived small or moderate penetration, and 115 (23%) reported large penetration. The mean number of years of perceived managed care penetration at the respondents' institutions was 4.1 (SD = 2.37). For 13 of the 19 statements, respondents who perceived a large degree of managed care penetration were significantly more likely ($p < .05$) to agree that managed care has negative effects than were respondents reporting small or moderate penetration (see Table 3). For instance, of respondents with perceived large managed care penetration, 52.2% believed that clerkship training sites were worse because of managed care, and 44.3% believed students' experiences in the clerkship were worse. More than half of this group reported decreased full-time and voluntary faculty time and enthusiasm for teaching and administration, increased clinical responsibilities, and decreased morale due to managed care. Items not signifi-

cantly affected by perceived amount of market penetration were resident participation in or enthusiasm for teaching, departmental use of small-group or lecture formats, or the school's attention to teaching.

Attitudes about Managed Care and Its Effects

In replying to opinion statements (see Table 2), the majority of respondents agreed that managed care negatively affects the health care system. For example, 422 (88.1%) agreed that "Managed care has made health care more like a commodity," and 345 (72%) affirmed that "Managed care has reduced professionalism in medicine." For "All Americans have the right to full access to good quality health care," 84.6% concurred.

Only 15 (3.1%) directors agreed that "Managed care is improving the health of most Americans." Half of the respondents affirmed that "Managed care has slowed the rise of health care costs for employers and the government." A minority of directors (27.6%) concurred that "Managed care has increased the cost-effectiveness of medical care," and only 13.8% stated that "Students in my school have a good understanding of the principles of managed care."

Narrative Comments

Of the 500 respondents, 160 (32%) wrote optional narrative comments. The most frequent comments fit into two categories: elaborations or restatements of the problems respondents believed were created by managed care, and planned or implemented adaptations to managed care at the respondents' schools.

Spontaneous comments about problems respondents believed were created by managed care included, in decreasing order of frequency, reduced faculty time for teaching medical students (the most common comment), reduced faculty morale, reduced access of medical students to patients, reduced quality of patient care, and mistrust of department and medical center administrators (the least common comment).

Illustrations of reduced faculty time included the need to take on more patient care obligations to stay financially solvent, difficulty finding convenient clerkship sites and resultant diminished opportunity to monitor the quality of education, and increased paperwork and phone calls to managed care reviewers. Examples of reduced morale included leaving academic medicine for clinical practice, resenting having to beg faculty members to teach, having to attend to fiscal rather than clinical concerns, and loss of faculty development opportunities.

Examples of students' reduced access to patients included managed care companies' excluding students from participating in patient care, residents' successfully competing with students to do procedures, and loss of opportunities to participate in making diagnoses. Examples of mistrust of administrators included perceptions that chairpersons may be hired because of business, not academic, skill, and that many medical school administrators are inattentive to faculty members' reduced morale and availability.

The most commonly mentioned examples of adaptations included increasing the numbers of students placed in ambulatory sites due to a reduction in learning opportunities in inpatient settings, and teaching more about managed care and its associated principles (e.g., cost-effectiveness, evidence-based medicine) and problems (e.g., ethical dilemmas, redistribution of health care dollars away from patient care).

Discussion

Our analysis of the perceptions of 500 interdisciplinary clerkship directors lends weight to previous analyses and anecdotal reports suggesting managed care is harming important aspects of teaching programs.[6,13,20,24] The ability to recruit faculty for teaching and educational administration, the professional life and morale of educators, and the quality of clerkship training sites were felt to be particularly affected. In areas of perceived high managed care penetration, directors discerned more widespread adverse changes. Respondents' written comments support the idea that the reduced ability to engage faculty in medical students' education results from faculty's increased managed care-associated clinical responsibilities and administrative duties, and diminished morale. Other concerns cited include reductions in ability to find and monitor clerkship sites, quality of care, and students' access to patients.

The significant association between perceived degree of managed care market penetration and effects on education suggests that respondents' opinions are based on experience. Alternatively, it is possible that the perceived negative effect on students' learning in the clerkship is influenced by respondents' discontent with other aspects of the system, which would likely be greater in areas of higher market penetration.[35] Unfortunately, our data do not allow us to test these different explanations.

Whether valid or not, perceptions alone may negatively influence educational outcomes. Previous studies of clerkship directors[36–38] indicated that they were an enthusiastic group with high job satisfaction and morale. For example, Johnson and Michener[38] reported that 97% of family medicine clerkship directors enjoyed their work. Sierles and Magrane[36] found that 80.4% of psychiatry clerkship directors thought their work was personally fulfilling and that the career aspirations of 65% were to remain in that role. In our study, directors reported experiencing increased clinical and administrative demands, reduced ability to perform research, and 64.2% of their responses cited decreases in their morale and quality of life. This

finding has face validity and suggests an important change with potential negative effects on teaching and other academic activities. Medical educators must have sufficient time and resources to develop, direct, and assess the outcomes of their programs.[20,39–42] Experience and amount of time spent teaching, enjoyment of teaching, degree of perceived support, and career satisfaction of educators have been found to predict excellent clinical teaching.[42,43] Good teaching, involving in-depth feedback to trainees who are well known, as well as an emphasis on psychosocial aspects of patient care, is time-intensive.[20,43] In addition, students are greatly influenced by the attitudes and behaviors of medical school faculty.[25,26] Our survey documents educators' widespread diminished enthusiasm for their work. Further study of clerkship directors' job satisfaction and turnover rates would be useful.

Factors other than managed care, which are consonant with mandates for increased use of small-group teaching and development of ambulatory clerkship sites, are felt to influence the educational environment as well. Little overall consequence is appreciated on residents' enthusiasm and participation in teaching, preclinical education programs for medical students, and use of small-group and lecture teaching formats.

Our finding that, of all medical teachers, residents are the only group whose participation has remained unchanged, suggests that residents may be doing a relatively greater proportion of student teaching. This result requires further substantiation. If valid, it may have educational implications, since resident and attending physicians emphasize different aspects of clinical care. Residents generally focus on clinical issues of immediate relevance and daily patient management, while attending physicians emphasize differential diagnosis, integration of disparate facts, question students more, link classroom learning to patient care, and locate the patient and illness in its broader, particularly psychosocial, context.[44,45]

Clerkship directors' written comments in our study indicated that some are attempting to include greater exposure to principles of managed care and ambulatory training in their curricula. However, despite efforts at curriculum reform,[3] and consistent with previous studies,[46] more than 86% of them perceived that students do not have a good understanding of the principles of managed care. This suggests a need to further survey medical school curricula on health systems organization and related topics and to make necessary adjustments to these curricula and to licensure examinations. Our respondents' relatively negative overall opinions of managed care are also consistent with previous reports.[24,46,47] Almost half of Simon et al.'s faculty sample disclosed that they delivered negative messages about managed care to students.[24] This suggests that principles associated with care management, such as appropriate resource allocation, evidenced-based medicine, outcomes assessment, and prevention may be conceptually conflated with the clinical and financial strains currently experienced under for-profit managed care. Others have noted the possibility that decreased clinical revenues due to managed care are a barrier to educational reform in this area.[6,48]

Our study has several limitations. First, because the questionnaire was anonymous, we could not compare respondents with nonrespondents. The response rate for psychiatrists (86.4%) was somewhat higher than that for the rest of the specialty groups. Our overall response rate of 62%, the large numbers of respondents, and the strength and consistency of the findings among specialties argue that additional responses would not have substantially altered the results.

Second, objective measures of market penetration could not be used because of the respondents' anonymity; therefore, we cannot determine the accuracy of these perceptions. However, the percentage distribution of perceived penetration by group is roughly similar to that of the four-stage Market Evolution Model developed by the University Health System Consortium[34] for the same year (1997). In addition, on average, our respondents had occupied their current positions as directors for more years (6.53) than the average estimated years of managed care penetration at their institutions (4.10). This number does not include years at the same institution in prior positions. Hence, the average respondent had some perspective on changes that had evolved during their tenure.

Third, like others,[24] we did not attempt to define managed care but relied on respondents' own experiences and definitions. Respondents' written comments suggested that it was the managed care-associated changes in faculty clinical practice and the AMC milieu resulting from stringent economic pressures that they were responding to in this study.

Finally, we do not know whether respondents correctly identified managed care as the source of changes they perceived. AMCs are currently subject to alterations in organization and financing beyond those precipitated by managed care, including reductions in Medicare payments and education subsidies, changes in Medicare documentation guidelines, modifications within the Veterans Affairs system, and new initiatives within medical education. However, previous research demonstrates that higher levels of managed care market penetration are significantly associated with declines in clinical practice revenues,[13] faculty productivity and attitudes,[21] levels of institutional research support,[22,23] and student-rated perceived adequacy of instruction in primary and ambulatory care, disease prevention, and health promotion,[48] as well as increased patient care duties.[22,24] These findings support a

similar association of managed care with the changes perceived by a majority of our respondents, since the alternative trends cited are nationally based.

Two factors may exacerbate the above findings. First, since the time of our survey, managed care's penetration into AMCs has accelerated; and second, medical education is likely to become even more expensive due to growing mandates for small-group teaching, training in ambulatory settings, involvement of clinical faculty in preclinical instruction, and use of expensive technologies, as well as decreases in subsidization by volunteer community physicians and teaching hospitals.[13] In this context, the perception that managed care has increased the difficulty recruiting volunteer faculty is particularly troubling, since that group is often relied upon to teach in dispersed ambulatory settings.

Further research is needed to validate the perception of declining quality of medical students' clinical education. Specifically, more objective measures of the economic environment of the AMC and its relationship to educational outcomes, such as changes in United States Medical Licensing Examination scores and measures of student satisfaction on the Association of American Medical Colleges' Medical School Graduation Questionnaire, should be used. In addition, qualitative research regarding specific changes in the teaching environment would serve to clarify and refine the source(s) of educational problems (e.g., diminished quality of care, supervision, and access to patients). However, the weight of the current evidence, along with the difficulty and time necessary to definitively assess the outcomes of medical education, make it crucial that these programs be vigilantly monitored and supported immediately.

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