5722
Vol. 1 of 2 2

Contract No.: 282-92-0044 (Delivery Order 6)
MPR Reference No.: 8202-200
Contract Amount: $74,996

FINAL REPORT

SYNTHESIS OF STUDY FINDINGS AND CONCLUSIONS

FINANCING OF ACADEMIC MEDICAL CENTERS AND GRADUATE MEDICAL EDUCATION UNDER COMPETITIVE SYSTEMS WITH MANAGED CARE

VOLUME I: OVERVIEW SYNTHESIS

December 23, 1994R

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With appreciation to Dr. Jack Hadley
for making available the empirical
national analysis (Appendix C)
and for general advice

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ALL VIEWS ARE THOSE OFTHEAUTHORS ONLYANDDO NOTNECESSARILYREFLECTTHOSEOF MATHEMATICA POLICH RESEARCH OR THE PUBLIC HEALTH SERVICE.

ACKNOWLEDGEMENTS

Dan Ermann and Kate Rickard served as project officers for this study. Brian Biles, M.D. oversaw its development and implementation and facilitated access needed to execute the work. Arnold Epstein, M.D. made suggestions and provided insights on policy concerns. Bob Dickler and Linda Fishman provided insights on AMC structure and concerns and facilitated access to individuals for the case studies. Candy Schaller did the same for HMOs. Julianne Howell and Greg Scott, respectively, aided in planning for the San Diego and Minneapolis-St. Paul site visits; Linda Fishman provided similar support for the Washington, D.C. market. Bob Crane and others assisted in scheduling specific sites.

We are particularly appreciative of the time senior executives and others with AMCs, other hospital systems and provider groups, and HMOs spent with us in describing their systems and the issues, as well as selectively reviewing the individual case studies. This study would not be possible without that support though we take responsibility for any inaccuracies or views expressed.

Within MPR, Embry Howell reviewed and provided useful comments on earlier drafts. Daryl Hall editted the manuscript. DeWayne Davis aided in the coordination and production of the report. Sharon Clarke and others were responsible for secretarial support. Barbara Foote assisted with scheduling interviews and finalizing the report.

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STUDY OVERVIEW AND SYNTHESIS OF FINDINGS

In response to the extensive restructuring of the health care system, the Office of the Assistant Secretary for Health (OASH) contracted with Mathematica Policy Research (MPR) to conduct a short-term study on how the growth of competitive health care financing and service delivery systems based on managed care have or could affect the financial support available to academic medical centers (AMCs) and graduate medical education (GME).

Our study, along with other research, is intended to provide OASH with an information base that can be used by the administration and Congress in considering health reform and other public policy proposals involving support to AMCs and GME in today's market. Our information comes largely from case studies of AMCs in the San Diego, Minneapolis-St. Paul, and Washington, DC, markets, complemented by a review of the literature and the findings of an ongoing related study on the financial performance of AMCs nationwide. This overview covers the methods and sources of information used in our study, an analysis of findings related to the four study questions, and a brief discussion of the policy implications of our work. The purpose of the overview is to complement the Appendices to this report, which provide greater detail on each of our study components and their findings.

Specifically, our study provides information on four major questions:

1. Are managed care plans willing to pay a premium to AMCs under competitive systems?

2. To the extent that AMCs are more expensive than alternative providers because of their teaching responsibilities, how much of these expenses have traditionally been paid through patient care revenues of various third-party payers?

3. How are AMCs faring now, and to what extent have they been adversely affected by the growth of competitive systems?

4. How is the growth of competitive systems affecting graduate medical education?

We found consensus among all parties that, in the current market, managed care plans are neither willing nor do they feel able to pay much, if any, premium for AMCs, particularly when established respected alternatives exist, as they typically do for most services.

AMCs do tend to be more expensive, though it is not clear how much training *per se* contributes to this expense. These costs have not been explicitly paid for by most payers but have historically been subsidized by patient care revenue, especially from charge or cost-based payers. These sources are less available in today's market.

We found relatively few short-term adverse effects on AMCs from the growth of competitive systems, but AMC's are nevertheless very concerned that managed care will put them at a disadvantage. They are thus seeking ways to position themselves for the future. Our findings also suggest that to the extent that managed care penetrates more heavily into the Medicare market, the

effects of competition on AMCs are likely to be intensified. This is because the benefit to individual AMCs of Medicare's direct medical education (DME) and indirect medical education (IME) payments are likely to be diluted by funding these payments within the Medicare capitation rates.

AMCs are attempting to reduce costs and develop affiliations useful to a managed care environment. AMCs are concerned that at some point, these cost reductions will detract from their unique mission, since they perceive some net cost stemming from GME. Many managed care plans, however, question the AMC mission, taking issue particularly with the training AMCs provide and its relevance to current needs for primary and ambulatory care. Yet training is more difficult in the ambulatory setting than in the traditional inpatient setting, and there is disagreement about how it should be done.

We found considerable support for pooled funding for GME among diverse parties, but there is no consensus on how it should be structured, who should receive it, or what it should support. We also identified potential conflicts between national, state and market objectives for provider supply and specialty distribution. There are, for example, potentially different criteria for assessing the value of training specialists when viewed from each perspective. In addition, our findings also indicate that it could be unwise to consider AMC policy independent of workforce objectives. To do so is to risk creating conflicting incentives particularly with respect to the kinds of physicians who should be trained.

METHODS AND CASE STUDY SITES

Study Challenges and How We Addressed Them

The issues of concern to this study are not ones easily addressed through existing research or extant national statistical systems. First, few systems are timely enough to capture changes in the health care system, which are rapidly evolving in the marketplace. Second, existing data systems are not typically comprehensive or detailed enough to incorporate analysis that accounts for the role of the multiple entities that make up AMCs and determine the financing of GME and the AMC as a whole. In particular, data systems are better at capturing information on the teaching hospital than on the contribution of the faculty practice plan or other revenue sources (e.g., research, medical school) to AMCs and their training functions. Third, even if the systems were comprehensive, it would be hard to analyze training costs, since AMCs provide a complex set of joint products involving teaching, research, and patient care.

AMCs vary considerably in their organizational and financial structure, but all have developed elaborate systems of cross-subsidies. This makes analysis difficult and it is even more so because power has historically been decentralized to the departmental level, at least within the medical school. In most cases (Medicare being a major exception), patient care is paid for with an aggregate sum that does not specifically differentiate a share to support training. Even if it did, AMCs have considerable freedom to determine how revenues are used and economies achieved. Thus, the indirect medical education payments do not necessarily show the indirect costs of GME at hospitals and, conversely, a reduction in support for GME would not necessarily translate into reductions in training when alternatives for generating equivalent savings could be more appealing.

Given these challenges, we used three very different sources of information in our study. We relied most heavily on case studies of AMCs in three markets so that we could obtain timely information about the issues of concern. These case studies involved primary data collection based

both on interviews conducted on-site and review of documents. We created a context for these case studies with information derived from an initial review of the literature and existing data sources. We also coordinated our efforts with Dr. Jack Hadley so that we could easily integrate and take advantage of his ongoing research for the Commonwealth Fund, which provides national analysis of trends in AMCs financial status.

A summary of the literature on issues of concern to this project is presented in Appendix A. The three case studies are summarized below and presented in detail in Appendix B. Appendix C summarizes the findings to date from Dr. Jack Hadley's work.

Approach to the Case Studies

The penetration of managed care and competitive systems varies from market to market across the country. In consultation with OASH and the American Association of Medical Colleges staff (AAMC), we decided to focus our case studies on markets most affected by trends related to managed care and thus most likely to provide insight about how other AMCs could be affected by the growth of competitive systems.

Two of the three markets are recognized leaders in managed care development: San Diego and Minneapolis-St. Paul. The third--Washington, DC--has a less developed but evolving managed care system, leading us to conclude that the market might provide an instructive point of comparison. Because it is located in the nation's capital, we sense that its institutions would be more familiar to federal policymakers and legislators, possibly making our findings more meaningful to them. In addition, we had contacts in all three markets, who would facilitate the process of arranging interviews. This was particularly crucial, since we needed access to a broad range of relatively senior level individuals to discuss potentially sensitive issues. We also had a very difficult time frame in which to work, since the interviews had to be arranged and conducted over only two to three months during the summer.[1] We are therefore especially appreciative of the assistance we received from AAMC, local contacts,[2] and also from the Group Health Association of America (GHAA), whose staff facilitated contact with selected HMOs.

Each site visit lasted from three to four days. The organizations included in the case varied in each market, reflecting their unique features. In all cases, our objective (which we typically achieved) was to interview the leaders and key staff at the AMC(s) (including the teaching hospital, faculty practice plan, and medical school), at least one potentially competing hospital or health system with a large tertiary care base, and two or more managed care plans in the market. The same individual, an experienced senior health policy researcher on the MPR staff, made each of the three site visits.

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[1] OASH wished to be able to use the study to address issues pending in health reform, potentially to be considered during that legislative session.

[2] In particular, we received considerable support from Dr. Julianne Howell of the UCSD Medical Center who, with the support of Michael Stringer at the UCSD Medical Center, arranged the San Diego site visit and provided an orientation and other assistance. Greg Hart of the University of Minnesota played a similar role in Minneapolis. In DC, Linda Fishman of AAMC facilitated our access to local AMCs.

The Three Case Study Markets

The three markets we studied--San Diego, Minneapolis-St. Paul, and Washington, DC-- are all heavily influenced by managed care. San Diego comes closest to the classical market, with the rapid evolution of competitive systems largely driven by the private sector. Minneapolis-St. Paul, like San Diego, is a very mature and competitive managed care market, but there is greater support within the market for collaborative policy development to address public policy concerns such as health promotion and quality enhancement. The business community is also central to the evolution of the Minneapolis market through its role as a purchaser.. While less mature than the other two markets, the managed care market in Washington is reasonably well developed. Also, many perceive that competition is becoming even more intense now, and a shake out is likely. Thus, our visit was timely.

The structure and role of AMCs also vary across the markets. In San Diego, there is a single dominant AMC (the University of California at San Diego, or UCSD), accounting for most of the residencies, which in turn are relatively concentrated in a few hospitals. In Minneapolis-St. Paul, there is a single dominant AMC (the University of Minnesota), but residencies are more dispersed among a number of hospitals, and there is emerging competition from the Mayo Medical Center. While the center is located outside the metropolitan area and serves as a national and regional referral center, it is increasing its role in the Minneapolis-St. Paul market. In Washington, we studied two AMCs (George Washington and Georgetown universities), and a third, Howard University, plays a unique national role in training minority physicians.

Washington's GME and health care system are the most complex of the three--both because of its size and the involvement of three major political jurisdictions, each of which has unique characteristics. Our case study therefore focused on only a segment of the market. Washington is also unique in that its two AMCs, unlike UCSD and the University of Minnesota, are private and do not receive public support. In all three markets, the AMCs we studied are well respected but are not among the top-ranked, most prestigious few in the nation. While it is not possible to generalize to all AMCs on the basis of only three cases, we perceive that the major findings and conclusions from these are relevant to a meaningful segment of AMCs nationwide.

San Diego

San Diego is a mature managed care market whose health care system has been rapidly consolidating. About 30 percent of the market is said to be enrolled in HMOs. The key distinction between coverage in the marketplace is between capitated plans (HMOs and related forms) and all other forms of coverage. While the managed care market includes numerous HMOs, the delivery system has been consolidating into a small number of entities that actually manage and assume risk for care under contract to HMOs. The main competitors are Kaiser, Sharp, Scripps, and UCSD. There has been some discussion about a merger between the latter two. Within the market, there appears to be consensus that there are too many hospital beds, too many specialists and, possibly, too many physicians overall.

San Diego is unusual for a market of its size in terms of its relatively short history with teaching programs. UCSD Medical School enrolled its first class in 1968. Previous to that, there were few residency positions. UCSD has a strong base in the medical sciences, a heavy emphasis on specialty training, and ranks high in clinical research. Research accounts for 52 percent of the medical school's expenditures. State funds represent the most flexible, but dwindling, share of the school's

support (14 percent). UCSD's major teaching hospital was previously the county hospital, and though others are involved, UCSD still sees itself as a major provider of care for the uninsured and Medi-Cal population.

There are 500 medical students and 503 ACGME-approved residents at UCSD. Residents basically rotate (as appropriate) through the two UCSD hospitals and the Veterans Administration Hospital. Pediatric residencies are provided in conjunction with Children's Hospital. Residencies outside the UCSD system are limited: Sharp recently initiated a family medicine residency, and Kaiser has some residencies, though for historical reasons, more are located in the Los Angeles market.

Two factors shaping UCSD's include the state's Medi-Cal managed care initiative and state legislation proposed by Senator Isenberg to increase the proportion of residencies devoted to primary care. UCSD is concerned that the first factor could adversely affect its market share and revenue, and the second is pressuring the UC system to place greater emphasis on primary care training.

Minneapolis-St. Paul

Minneapolis-St. Paul is very mature managed care market whose health system has also rapidly consolidated. About 44 percent of the population is in HMOs. There are two main competing systems, HealthPartners and Allina, formed through mergers. Along with Blue Cross and Blue Shield, they account for 80 percent of the total Minnesota managed care market. Price competition has been heating up in the market, though it is not as intense as in San Diego. Premiums, for example, are expected to rise by only 3 to 4 percent, with some groups holding steady.

The University of Minnesota is the dominant AMC in the market, with 869 students and an additional 102 in Duluth. Statewide, there are 2,240 medical residents. While they train at 25 institutions, University of Minnesota has 967 residents, followed by the Mayo Medical Center (985 residents, but fewer full-time positions), and Hennepin County Health Center (186 residents). Compared with the other AMCs we studied, University of Minnesota trains a larger share of primary care physicians, reflecting both the entry of students from the two-year program at University of Minnesota, Duluth, and a rural physician associate program. Fifty percent of medical school graduates are said to enter primary care residencies.

The Mayo Medical Center emphasizes specialty training--only 20 percent of the residencies are in obstetrics, pediatrics, internal medicine, or family practice. It also is distinctive in that its decision- making is centralized within the system; physicians are salaried and have set clinical responsibilities.

Minnesota has been a leader in state health reform efforts, prompting many of those involved in health care to position themselves for a system with much greater statewide emphasis on managed care. This is particularly true for the University of Minnesota (as well as for Blue Cross and Blue Shield), which draws half of its revenue from patients outside the 10-county metropolitan area (30 percent from other areas of the state). As part of its reform effort, the state is working to identify how to fund medical education and research. While this effort is staffed by state personnel, it involves extensive public-private cooperation.

Washington, DC

Washington, DC, is a rapidly evolving managed care market that has about 14 percent of the population in HMOs. The market is heavily influenced by the federal government and its associated Federal Employees Health Benefits Program, and the National Institutes of Health clinical facilities that draw physicians to the area. There are numerous large providers and health plans, but none is clearly dominant, and the system is less consolidated than in the other two markets. The market is heavily influenced by its three diverse geopolitical jurisdictions and natural boundaries, like the Potomac River, which influence care-seeking behavior.

Unlike the other two markets, Washington has no publicly supported AMCs, with the possible exception of Howard University, which receives federal support. Our case study focused on the other two AMCs in the area: Georgetown University and George Washington University. Georgetown has a larger medical school and set of residencies than George Washington (779 versus 640 students and 521 versus 378 residents). In the absence of state support, both are dependent on clinical revenue, and George Washington is even more so, as it has considerably less research revenue. Sixty percent of the medical school revenue is clinical, and only 21 percent is research. Tuition, the highest in the country, has recently been frozen. Both Georgetown and George Washington University differ from others we studied in their use of an open faculty, which draws members from the community. George Washington is unique in that it has a university-owned and - controlled HMO. It was originally established for training purposes and is still very involved in training.

The Washington market is also unique in that it includes Maryland, the state with the only remaining all-payer hospital rate-setting system. Both AMCs are in the District of Columbia. Because Maryland's system highly limits discounting, we were told that this gives District hospitals greater flexibility in negotiating rates even though average rates for District hospitals are higher than those in Maryland.

FINDINGS

This discussion of findings is organized according to the four questions addressed in this study.

1. Are managed care plans willing to pay a premium to AMCs under competitive systems?

   a. Managed care plans generally negotiate rates with AMCs that are competitive with those paid for similar services offered by other providers.

In the three markets we visited, managed care plans are neither perceived by AMCs nor do they perceive themselves as paying a premium (or much of one) to AMCs unless the services are not available elsewhere. The widely held view is that the market, primarily purchasers, is largely price driven and does not support such a premium. Some plans indicated they might pay more for better quality or patient severity, but few perceive that such conditions could be readily documented.

b. When a "premium" is paid, it is generally small, perhaps on the order of 5 to 10 percent and is generally justified on the basis of patient mix or other factors.

When UCSD developed a plan for containing costs to reduce the disparity between its rates and those of competitors, it initially assumed that it would be competitive by reducing its rates from what it calculated to be costs 35 percent higher than community hospitals (adjusted for case mix and severity) to 10 to 15 percent higher. However, just two years later, it is now less certain about the ability to sustain this differential.

One plan that mainly serves national accounts and thus needs coverage in the San Diego market pays UCSD for hospital services at a rate it said is competitive with that paid for similar services elsewhere, but it uses stop losses and some favorable rates on selected tertiary services. These last two mechanisms could selectively result in higher payments to AMCs if they treat sicker patients generating higher expenses or using very specialized sources. The UCSD medical group was able to effectively make the case with this plan that it experienced adverse selection, and so it negotiated rates about 10 percent higher than they would have been to other providers. In Minneapolis, one payer adjusts its rates into 35 diagnosis related group (DRG)-like categories, so there is some implicit premium for higher costs associated with case mix. However, one AMC noted that the adjustment was not always the full face value of the rates generated by this adjustment. In Washington, one plan noted that it sought to negotiate for broad packages of services, and so it might pay more for one service if this allowed it to bundle a broad set of services, thus expediting the HMO's ability to deliver care.

An exception to the rule in payment parity is very specialized tertiary services for which there is little competition. For example, there may be no discounting of bum services. However, as one plan noted, these kinds of specialized services account for only about 7 percent of the HMO premium.

While some plans adjust rates for case mix, the AMCs we spoke with perceive that their tertiary setting led to an adverse case mix that was not adequately accounted for in rate setting. For example, a small but expensive number of patients needing specialized services might have been referred to the AMC. On the other hand, at least one interviewee noted that there are many ways in which AMCs might "game" the system to increase revenues.

c. AMCs are the sole provider for only a few tertiary services in the markets we studied, and managed cure plans thus typically have choices in contracting.

In most cases, there are well-respected competitor hospitals that have affiliated physician staff who were often trained by the AMCs in the market. As one interviewee noted, "We trained our competition." In Washington, for example, Georgetown has a long-established affiliation with Fairfax Hospital for training a variety of specialists. Fairfax is part of the ANOVA Health System, an emerging dominant player in the northern Virginia managed care market, and it offers extensive tertiary services, many of which are staffed by and compete with physicians trained through the Georgetown affiliation. In San Diego, for example, UCSD's strong research orientation has led to some turnover among faculty more interested in clinical care. Having left the university, many of these faculty have established competing programs at Scripps clinic or other competing systems.

While obviously crude and based on broad DRG-based classifications, an analysis of the San Diego market highlights how care is likely to be dispersed across diverse providers even for relatively

specialized services. (We obtained the analysis from one of the competing health systems in the area.) The analysis indicates that in the first half of 1993, UCSD accounted for only 7 percent of cardiovascular surgery, 24 percent of gastrointestinal surgery, 22 percent of tertiary oncology, and 22 percent of tertiary trauma services.

2. To the extent that AMCs are more expensive than alternative providers because of their teaching responsibilities, how much of these expenses have traditionally been paid through patient care revenues of various third-party payers?

Some GME costs have traditionally been offset by third-party revenue from charge or cost-based payers, but these sources are becoming less available in highly competitive or even less competitive markets.

a. The AMCs we visited typically saw some net cost to training, though only the direct costs at best could be quantified.

The structure of AMCs makes it hard to analyze training costs. Potential revenues for AMCs include:

- Tuition
- Research grants
- Clinical practice fees to affiliated faculty and other practitioners
- Third party hospital payments
- Federal support (Medicare IME and GME, Veteran's Administration)
- State support (direct support; also indirect through Medicaid)
- Endowments

At the medical school level, training costs tend to be financed through a combination of state support (for public institutions) and clinical revenues generated by the faculty; research makes a limited contribution. Hospitals fund the bulk of the costs of residents largely from clinical income and from some limited support provided by the faculty (e.g., from their practice income or from research grants). The line between medical school and hospital costs is blurry, making it difficult to count even direct costs. For example, at UCSD faculty salaries are paid directly by the School of Medicine but this is not true at some other AMCs. In Minnesota, residents are paid through the medical school even though most funds come from the hospital. The AMCs we visited had no estimates for the indirect costs of medical education, though they perceive these costs to be both important and a result of lost productivity, extra testing, and duplication of services, among other factors. For example, one AMC administrator cited a combination of various revenue streams (e.g., Medicare's DME and IME payments) as the source of his estimates of GME costs.

Training costs vary with the stage of training. We were told that medical students (especially in the clinical years) are most expensive. Residents become less expensive over time, and the costs may balance out over a three-year program. For example, the George Washington health plan (i.e. HMO) estimates from its experience and analysis that training requires 20 to 25 percent more space and 20 to 25 percent more personnel, and that they reduce productivity by 25 to 33 percent. However, the expense of teaching is viewed as proportional to experience, with the health plan losing money on a first-year resident, breaking even the second year, and generating a surplus in the third.

Because residents provide services that others would need to provide, it is not clear, on a net basis, how they affect costs. At UCSD, for example, a drop in general surgery residents led to less coverage of the emergency room and orthopedics, and to a request to add a physician assistant. If there are fewer residents, there is potential for the faculty workload to change because faculty may be required to work more hours, which may or may not be desirable. We heard at UCSD, for example, that faculty are "working harder for fewer dollars." This was not only an effect of competition but also a response to reductions in state funding, the economy, and greater competition for research funds.

We also found differences of opinion about how large these costs differentials for training inefficiencies were or had to be. One managed care plan, for example, questioned why physicians should not be trained to practice in the cost-effective style that would be expected of them in the future.

b. Our literature review indicates that explicit payment for GME **is restricted primarily to Medicare and some Medicaid payers even though these functions are subsidized indirectly by charge-based payers--a declining share of the market.**

Through the Medicare program, the government is the largest single explicit payer of GME costs. Considering direct and indirect payments, we estimate that the contribution accounts for approximately 2 percent of total spending for hospital care and 9 percent of Medicare prospective payment system payments in 1991. In 1989, 23 of the 37 states using PPS methods in their Medicaid programs also included an adjustment for teaching. However, to the extent that Medicaid rates are below cost (as they typically are), they provide little GME support even if they explicitly recognize the function. While some Blue Cross and Blue Shield plans historically paid for GME because they used cost based rates, few do so now.

Historically, private payers have supported GME indirectly because their revenue has been used to underwrite the costs of the AMC. This has been particularly true for charge-based payers that offer traditional indemnity products. However, these payers now represent a declining share of the market and, in today's market, even they are changing their payment methods in response to competition. For example, the UCSD medical group estimates that traditional indemnity plans now pay 60 percent of charges as compared to 80 percent previously and they now account for only eight percent of revenue. In contrast, one large preferred provider organization (PPO) pays 55 to 60 percent of charges, and a capitated plan pays 50 percent. However, the latter also generates more business. In contrast, Medicare has reduced its payments from 50 to 42 percent of charges, and Medicaid pays only 26 percent. The comparison against charges provides a consistent metric for comparing payers but may understate each payer's contribution to cost. For example, the Prospective Payment Assessment Commission estimates that in 1992 Medicare hospital payments were 89 percent of costs nationwide (ProPAC 1994). They were 91 percent for Medicaid, though this proportion varies considerably by state.

These patterns by payer suggest that the level of payment, rather than the explicit recognition of training costs, determines support for GME. From our ease studies, it is clear that today's market has reduced the availability of traditional charge-based revenue, both because the role of traditional indemnity insurance in the market is smaller and because the market allows less of a premium to be paid. To the extent that managed care has replaced traditional insurance, AMCs receive_ lower rates. It is not clear whether they are lower than those of Medicare and Medicaid, and whether they could vary by state or institution. One AMC in Minnesota estimates that if cost equals 70 percent of charges, then Medicare pays 65 to 70 percent, Medicaid 64 percent, managed care 50 to 75 percent, and more lucrative payers (e.g., workers compensation) 80 percent.

Another factor that will affect the "premium" paid by managed care is the form of payment. For example, discounted, per diems are common at UCSD, but length of stay has been dropping substantially, and so revenues have shrunk.

c. Medicare is viewed as an important source of funding for training, but relatively little attention has been given to how the shift to capitation could affect the distribution of these payments.

When Medicare calculates capitation rates for risk-based plans, it attempts to approximate, though not always successfully, what the costs would have been for comparable individuals treated in the same market under fee-for-service systems. This "AAPCC" is the capitation rate paid to managed care plans adjusted for case mix based on demographic factors. GME payments under Medicare are included in the cost base used to establish the "USPCC" or national estimates of Medicare per capita costs. Area differences in GME are accounted for by the "geographic adjuster," a five-year rolling average comparing county Medicare costs to the national average and generating the "AAPCC." This methodology is budget neutral with respect to federal payments for GME in that market so long as managed care plans make the same average use of AMCs as do physicians as a whole serving Medicare. We have no evidence on whether this assumption holds. However, what is most relevant to the study is the fact that once GME funds are included in capitation payments, there is no guarantee they will go to AMCs. That is, these funds could be distributed among all the hospitals rather than being targeted at AMCs.

The AMCs we met with and the managed care plans we interviewed generally indicated that managed care plans pay AMCs based on negotiated rates, not Medicare rates. Thus, Medicare's subsidy to support the costs of IME and DME does not necessarily pass through to specific AMCs. Given other study findings, this suggests that if managed care grows within the Medicare program, the result will be less targeting of GME support to specific AMCs based on Medicare's criteria. The impact of this imbalance will depend on how managed care's total rates and payments compare to those of Medicare. That is, it is possible that managed care plans pay no premium to AMCs but could still pay rates higher than those of Medicare.

3. How are AMCs faring now, and to what extent have they been adversely affected by the growth of competitive systems?

AMCs have not experienced major short-term adverse effects as a result of the growth of managed care, but they are concerned about, and are working to position themselves for, the future.

a. A recent national study shows that the hospital margins of academic health centers (AHCs) have improved relative to other large hospitals despite the growth of managed care, largely because they have limited cost growth and protected collection rates.

In his analysis of the financial experiences of AHCs from 1984 (when Medicare PPS was implemented) to 1991/92, Jack Hadley found that AHC hospitals' margins actually increased over the period, while those of other large hospitals decreased even though HMO enrollment grew in many of the markets where the AHCs are located. This occurred because AHCs limited their cost growth and protected their "collection rates" (i.e., deductions from gross charges) better than other hospitals. He concludes that "the primary implication for the future is that AHC hospitals, even with their substantial missions of care to the poor, medical education, community service, and medical research, will take measures to preserve their financial viability when external changes ... alter the economic environment in which they operate." While this study covers only the period ending 1991-92, the general conclusions are consistent with our observations in the three case study sites. That is, our results generally do not indicate for those we studied that the AMC's financial position had eroded as of mid 1994 and confirm that AMCs have taken some steps to contain costs.

b. AMCs are making efforts to position themselves for a future, which they assume will involve more managed care, but depending on their form and history, they face disadvantages in doing so.

Most of the AMCs we visited are responding to the need for more competitive rating by instituting broad-based cost-reduction strategies. For example:

- UCSD established a cost-containment program aimed at reducing costs by $70 million and estimates that it has achieved $45 to $53 million in savings so far, giving them more room to negotiate rates with managed care plans.
- The University of Minnesota cut $45 million in expenditures, allowing it to reduce its expenses relative to the market. They were previously 20 percent higher.
- Georgetown instituted a $20 million cost-reduction program.
- George Washington plans to replace its facility with a downsized inpatient unit that is more congruent with current use patterns and preferences for ambulatory treatment.

The AMCs were able to make these reductions without greatly changing service mix, though they expect they may need to eliminate or reduce certain unprofitable services in the future. In some cases, the savings were obtained by cutting replacement reserves, which results in only short-term savings (assuming a need to eventually replace capital).

The perception is that some AMCs might not survive, though those we visited are more confident. The more important issue for them is how much they would be changed and whether they would remain distinctive. Most are working to generate more covered lives, generally through diverse managed care arrangements designed to bring in more people, and to create a better mix of primary and specialty care by increasing affiliations with primary care providers. For example,

- UCSD is creating an integrated network with community providers. UCSD increased its managed care enrollment base from 15,200 in mid-1991 to a current 65,000. It anticipates that by 1997, 39 percent of its market will be HMO. Perhaps the greatest challenge facing AMCs rests in the decline in inpatient use, reflecting a combination of drops in inpatient stays, decreased admissions, and greater competition for patients. In California, UCSD indicates that some groups now are running as low as 90 days per 1,000 commercial members and 750 per 1,000 for Medicare. This increases the size of the network needed to generate the same volume of revenue. It estimates it needs 321 primary care providers to generate the referral base it needs.

- The University of Minnesota aims to (1) remain a valued health care provider for all plans while creating an integrated delivery system with a major partner, (2) solidify its relationship with rural Minnesota, and (3) continue to be competitive in its tertiary referral market.

- George Washington is expanding its community-based network. Within its HMO, only 30,000 of the 72,000 enrollees are served at the medical center, and another 17,000 are with the group physicians in other locations. The remainder are served by the network of community physicians.

- Georgetown has established an employer-sponsored PPO for its employees with 8,000 members and is considering what role this approach should play in the future as the AMC responds to the managed care market.

Most efforts focus on enhancing the ability to compete for routine referral and inpatient services that make up most inpatient care ("bread and butter" services) and are the most competitive services in the market. Tertiary care appears to make up a small percentage of services at AMCs, and in any case, it is hard for AMCs to survive only on these services.

An institution's competitive position, among other things, is affected by the following:

- Public or private status
- An open or closed panel
- History of managed care contracting
- Whether it has its own managed care plan
- How it is viewed by community providers and health plans

Public institutions have the advantage of a flexible funding source to support training, though these sources have been diminishing as a percentage of medical school revenue, and they are more important to faculty support and undergraduate training than to the expense of residents. Private institutions are more flexible in terms of contracting and responding to the environment. For example, the need for state approval delayed for many years the construction of a new hospital in

La Jolla in the San Diego area and seriously affected both UCSD's ability to position itself and the ultimate value of the facility itself. Lack of capital to negotiate arrangements with practices is regarded by UCSD as one of the major impediments to succeeding in building a network in collaboration with community physicians. It cites competitors who are said to have $40 to $50 million they can use to "buy" practices.

Whether an AMC has an open or closed medical staff (i.e., whether community-based physicians have admitting privileges) also affects its position. Only the Washington AMCs have an open faculty, though UCSD is attempting to develop one. AMCs with closed medical staffs do not typically have strong feeder systems and therefore may have a smaller patient base. This becomes especially important when length of stay is declining and when competition is keenest for "bread and butter" services. UCSD, for example, originally had a study that calculated that a patient base of 220,000 would be sufficient to support their needs, but it is now calculated that this figure is closer to 440,000 given the changes in hospital use patterns in the market. Several HMOs we interviewed in the Washington market noted that an important factor in their contracting was the ability of their physicians to provide care to hospitalized patients, which would appear to be a disadvantage for closed medical staffs.

Historical managed care arrangements and how they affect AMCs in an evolving health care market are another factor that affects strategy. In Minneapolis-St. Paul, for example, many managed care arrangements were developed years ago when the University of Minnesota was less interested in affiliation, and Group Health Inc. (GHI) (the earliest HMO) had problems finding institutions willing to grant privileges to its physicians. This history means that the University of Minnesota is a marginal player in the metropolitan managed care market and may find it hard to reenter the market, at least within the Minneapolis-St Paul metropolitan statistical area. In Washington, Georgetown has had a long affiliation with Kaiser, possibly because the plan was originated at the university. On the other hand, although George Washington had such a long history with Group Health Association (GHA), the plan has been recently acquired by Humana, and arrangements may change. And even plans that want stability have shown that they are willing to change provider arrangements if they are not working out.

The fact that an AMC has its own managed care plan could help or hurt it. It provides a natural feeder base for specialized referrals and hospital services and a set of experiences with managed care However, having such a plan could also constrain an institution's competitive response and potentially discourage competing plans from affiliating with it. For example, George Washington has its own HMO that accounts for about half of its managed care revenue, while Georgetown has tended to rely on contracts with existing HMOs, though it is now sponsoring an employee PPO and considering how it should evolve. Because of their role in tertiary care, AMCs are also concerned that they retain a variety of managed care contracts. AMCs like the University of Minnesota are working to position themselves to achieve both these objectives,

Finally, many AMCs we visited are at a disadvantage because of the tensions between "town" and "gown." Many AMCs are viewed as being specialty dominated, historically arrogant, and not customer driven. While many are making a major effort to change, their history affects how they are viewed by community physicians and competing institutions, which obviously have their own interests at heart. Another complaint we heard from community providers is that AMC faculty are unresponsive in handling referrals and often fail to return the patient to the referring physician or notify the physician of the treatment. On the other hand, this does not appear to be inevitable, since one HMO cited customer orientation as an important reason for becoming more involved with this

AMC. And another noted that in today's competitive market, physicians may be attracted to AMCs because they perceive they will not skimp on quality.

4. How is the growth of competitive systems affecting graduate medical education?

The growth of competitive systems is generating pressure to change GME, but the system is slow in responding, and there are many barriers and issues associated with a transition to primary care and ambulatory care based training.

a. Managed care plans perceive that AMCs are training the wrong physicians, in the wrong specialties, and in the wrong settings.

The HMOs perceive a much greater need for primary care training in settings that reflect the current market and delivery system. There appears to be some interest in having managed care plans serve as training sites for primary care physicians and, possibly, to have them underwrite some of these costs, especially to the extent that the plan gains by increasing recruitment. (This varies considerably by market and plan.) In San Diego, the Sharp system established its own family medicine department to help it recruit providers in a market it perceived as turning out inadequate numbers of primary care physicians and an AMC unwilling to change.

While our limited study provides no firm indication of the interests among managed care plans on a national level in serving as training sites, the fact that they perceive new physicians as poorly trained for the managed care setting has been documented in other broad-based studies, including one by MPR for the Health Services and Resources Administration involving site visits to 23 HMOs and a GHAA survey of a sample of HMOs also sponsored by HRSA.

On the other hand, AMCs are uncertain about the interests of managed care plans. One AMC administrator articulated the concern that managed care is a marginalized buyer that is cannibalizing the system, causing dislocation, and not willing to pay anything for the next generation of physicians beyond what would support its narrow self-interest.

b. The domination of specialties in AMCs has evolved as a result of a variety of strong incentives, and there is both pressure and obstacles to change.

Well-established financial incentives appear to have "succeeded." They favored procedure and specialty-oriented care, more care rather than less, and the development of more complex service infrastructures even where existing competing services might be underutilized. In the markets we visited, the AMCs are churning out specialists who, in turn, want to train more specialists. Faculty, for example, gain an advantage from trainees who might enhance his or her ability to pursue research interests and devote less time to clinical care, especially for patients seen outside the faculty practice plan. Faculty can also gain prestige from having residents and fellows in their specialties and subspecialties. But, in turn, these specialists are often hired in the community, leaving the AMC with few distinctive services since they "trained the competition." Despite some erosion, departmental power bases are still very strong, and procedure-oriented specialties and those departments with a strong research base are stronger still because their greater revenue allows them to sponsor more residency programs. While competitive pressures are forcing some reassessment,

the threat of legislation on residency mix (i.e., the Isenberg bill) was probably a greater influence than competition on UCSD's residency mix.

On the other hand, interviewees perceive that specialty incomes are declining relative to those of primary care physicians, and for some specialties (e.g., radiology), there may be no new positions in highly saturated markets. It is unclear how much of this can be attributed to oversupply and competition versus the effects of a resource-based relative value scale. In our visits, we saw growth in family medicine residencies but not major shifts in the specialty orientation of the AMCs we visited. In general, the changes in residencies so far appeared to be small and at the margin. However, we did see dynamics that might lead to such a shift and some changes in faculty mix.

c. The shift to ambulatory care delivery as well as competitive systems is encouraging more training in ambulatory settings, but there are obstacles to creating effective programs as well as differences of opinion about what this training should involve and what role AMCs should play.

At UCSD, a major incentive for training in ambulatory care is that the length of stay has dropped so low that the patient is not hospitalized long enough to support training needs. Yet, this type of training, according to observers in several markets, is more demanding than inpatient training. The ambulatory setting is more decentralized, making supervision more difficult, and space in which residents can observe an issue. We heard different reports on how well patients would accept care from trainees--both in general and with its associated inefficiencies and great time element. Some suggest that the patient's reaction could depend on how the attending physician or organization presents the situation. When physicians are paid on a financial basis which results in reduced income for inefficiencies (e.g., capitation), they may be less willing, we were told, to have a resident join them in office care even though they may be very willing otherwise to serve as an "attending" (with its associated status) at the hospital. Establishing payment offsets for these effects is hard when residency training funds flow through the hospital that might legitimately question the use of funds in nonhospital settings. But providing them to the medical school could increase the potential for further encouraging specialty training.

Beyond the economics, there appear to be strong differences in opinion about how ambulatory training should be structured. Among AMCs, there is concern about the possibility of returning to the "pre-Flexnerian" era of apprenticeships, along with a perception that community-based providers, including some managed care plans, do not understand what teaching requires. Managed care plans perceive these problems to be less extensive, and they are often receptive to the idea that AMCs would coordinate and facilitate training in a role one plan termed "teaching the teachers."

d. Our cases highlighted potential conflicts between national, state, and market needs and their influence on the workforce.

AMCs view a strong intellectual and scientific base as essential to training. If specialty training is to be reduced, it may make sense to concentrate it in certain locations. Individual markets, however, are unlikely to support training, the beneficiaries of which would be more broadly defined. States feel similarly. For example, reform in Minnesota is focused on the GME needs for the state, generating concerns among AMCs like the Mayo Clinic that regard their mission as more national. Most of the AMCs we visited had at least regional markets for their trainees, and some were national. There also is a problem if a local market does not provide enough patients to support a

service, perhaps because patients are dispersed throughout competing systems. This could be more likely in a managed care environment.

Unfortunately, this creates a dilemma. Our analysis suggests that market forces alone may not necessarily result in the appropriate level, mix or concentration of specialty training. Managed care will push for few specialists, but the built-in incentives of AMCs are likely to generate pressure for more specialists and fewer primary care physicians than the market wants. Yet virtually none of those we interviewed wish to see the federal government specify which residents should be trained, and we assume even fewer AMCs would support federal action to identity a select group of AMCs to turn out any requisite number of "superspecialists.

In addition, some medical educators wonder if it is realistic or effective to assume that physicians should have a generalist orientation. They either challenge the view that generalists could know enough or be the most cost-effective providers, or they wonder if nurses might not be a better choice for the intended function.

Support for pooled funding for GME is widespread, but there are different opinions about the form it should take. Among managed care plans, there is greater interest in tying support to the setting of training rather than just to hospitals or medical schools.

CONCLUSIONS

Our study suggests that the public policy issues associated with AMCs in a competitive environment are complex and tend to preclude "black and white" solutions. While AMCs are not currently in short-term crisis, there is some legitimate concern that their mission could be jeopardized by competitive forces and their influence on the availability of funding and patients within AMCs. On the other hand, the health care environment has changed, and AMCs, among others, need to respond. In particular, they need to develop training that is appropriate to the shift in care to outpatient settings, the growth in managed care, and a greater concern for cost and cost-effectiveness.

From a public policy perspective, the key issue is how to preserve yet reform AMCs so that those important for the future are well-positioned for the mission they will need to accomplish. Financing of AMCs has a major effect on the scope and mix of their GME and on the locations of training. Policies to help AMCs make the transition to a competitive market are best developed in conjunction with those for GME so that the objectives of both can be achieved. While states can play an important role in developing these policies, particularly when they provide fiscal support for training, the federal government will critically influence policies because of its support to GME in Medicare and general influence in the market. In addition, some federal role in policy development would appear important given the regional and national labor markets served by some AMCs and specific specialty training programs.

Our study also suggests areas where future research on AMCs may be constructive. 'One such area is longitudinal monitoring to assess trends, using measures sensitive to important change, in the financial status of AMCs and how their response influences valued public policy objectives like training, care for the poor, tertiary care or provider supply, positively or negatively. Because of the time lags in available data and their limitations, this may require approaches similar to that used here, potentially following a series of markets over time.

A second area for attention is to assess the impact of any change in AMC mission. For example, if AMCs switch their service mix, how does this affect the levels of resources available in the community, access to care, the ability to train and the content of training.

A third potential area for study is to identity organizational arrangements and models for ambulatory based training and their associated strengths, weaknesses, costs, and financing implications. This could be followed with a national survey to identify the use of these models and the factors influencing their adoption.

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Contract No.: 282-92-0044 (Delivery Order 6)
MPR Reference No.: 8202-200
Contract Amount: $74,996

SYNTHESIS OF STUDY FINDINGS AND CONCLUSIONS

FINANCING OF ACADEMIC MEDICAL CENTERS AND GRADUATE MEDICAL EDUCATION UNDER COMPETITIVE SYSTEMS WITH MANAGED CARE

VOLUME II: APPENDICES

December 2, 1994

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With appreciation to Dr. Jack Hadley
for making available the empirical
national analysis (Appendix C)
and for general advice

Submitted to:

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APPENDIX A

LITERATURE REVIEW

LITERATURE REVIEW

FINANCING OF ACADEMIC MEDICAL CENTERS AND GRADUATE MEDICAL EDUCATION UNDER COMPETITIVE SYSTEMS WITH MANAGED CARE

November 1994

by

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This literature review was developed under Contract No. 282-92-0044, Delivery Order #6, with the Office of the Assistant Secretary for Health. Any opinions or perspectives are solely those of the author.

I. INTRODUCTION AND FINDINGS

This literature review was conducted under a contract with the Public Health Service (PHS) as part of a project to develop better information on current levels of support for graduate medical education (GME) from managed care plans and to assess how this level of support compares with that provided under indemnity coverage. PHS' primary interest is in assessing the extent to which the growth of managed care might jeopardize the financial viability of academic medical centers (AMCs) and their associated functions of GME, patient care, research, and, in some cases, indigent care. Hence, the focus of the project is not the direct involvement of managed care organizations in GME, but managed care referral and payment policies for services at AMCs. This literature review does, however, present findings on both issues. Its purpose is to provide context and support for findings from the case studies and quantitative analysis--the other components of this project.

With the exception of Medicare and a few other payers, GME payments are generally not explicitly identified under traditional indemnity coverage. Similarly, payments by managed care organizations, if any, for GME cannot be separated from total payments to hospitals for patient care. Hospitals also vary in the extent to which GME payments are brought into negotiations with managed care plans (personal communication, Dr. Gordon Moore, June 8, 1994). Thus, most managed care plans are unlikely to know how much they pay to support GME.

The literature contains little evidence on the effects of managed care on the revenues of AMCs. Anecdotal evidence suggests that managed care organizations contract with AMCs but negotiate' discounts before they are willing to do so. And although these contracts range from those that cover the full range of services to ones for specialized services, anecdotal evidence suggests that managed care organizations could be more likely to refer patients to AMCs for specialized rather than routine services.

Few HMOs appear to be directly involved in GME, although a larger number may be indirectly involved. A 1990 survey found 15 percent of HMOs directly involved in GME, the majority of which are staff and group model HMOs. A 1994 study of 23 HMOs found that in most of the HMOs currently involved in GME, the arrangements are generally initiated by the physicians rather than the plans. Another 1990 survey found that 64 percent of family practice residencies had provider contracts with HMOs, which is another form of involvement in GME.

II. THE CURRENT SYSTEM OF GRADUATE MEDICAL EDUCATION

A. OVERVIEW

Graduate medical education takes place primarily in inpatient settings.' In 1992, there were roughly 99,000 residents and fellows in more than 1,100 teaching hospitals across the country [American Association of Medical Colleges (AAMC) 1994]. These teaching hospitals range from those that serve only as rotation sites to those that sponsor more than 20 residency programs.

Teaching hospitals are generally larger than nonteaching hospitals. In 1989-90, hospitals with 500 or more beds, which accounted for only 7 percent of the total number of hospitals, provided training for more than 58 percent of medical and dental residents [American Hospital Association (AHA) 1991]. The largest teaching hospitals are members of the Council of Teaching Hospitals (COTH),[2] and they provide training for more than three-fourths of the residents (Iglehart 1993). In 1991, short-term nonfederal COTH member hospitals had an average of 174 house staff,[3] compared with an average of 20 for non-COTH teaching hospitals (AAMC 1994). The largest COTH members are the 120 AMCs, each of which comprises a medical school, at least one teaching hospital, and a faculty practice plan.

Teaching hospitals also tend to be located in large urban areas and provide more specialized services than nonteaching hospitals. In 1991, 61 percent of COTH short-term nonfederal hospitals were located in metropolitan areas having populations greater than one million, compared with 42

'Family practice residency programs are the exception. They are based in ambulatory family practice clinics.

[2]COTH member hospitals sponsor or participate to a substantial degree in at least four approved, active residency programs, two of which are in the specialties of internal medicine, surgery, obstetrics-gynecology, pediatrics, family practice, or psychiatry; they are also affiliated with medical schools. In 1991, there were 376 COTH member hospitals. Fifty-six percent of COTH short-term non-federal hospitals had 500 or more beds, compared with 12 percent of non-COTH teaching hospitals, and one percent of non-teaching hospitals. (AAMC 1994).

[3]Including dental residents and interns.

percent of non-COTH teaching hospitals and 18 percent of nonteaching hospitals (AAMC 1994). Table II.1 presents selected characteristics of teaching hospitals.

B. CURRENT CONCERNS

Medical practice and the structure of medical care delivery have changed considerably in recent years: lengths of stay have fallen, and much care has shifted from inpatient to ambulatory settings; managed care organizations and managed care delivery practices have grown rapidly. These changes raise several fundamental questions related to GME: what kinds of physicians are needed? where is the best place to train them? what is the best way to finance GME to meet the nation's health care needs?

1. Reductions in Lengths of Stay and Shift of Care to Ambulatory Settings

Changes in medical practice and in the structure of medical care delivery systems in recent years have reduced the educational value of inpatients (Davidson 1989). More pressure to contain costs and more evidence on the safety of earlier discharges have reduced lengths of stay (Schroeder 1988).[4] As a result, only the more severely ill are in hospitals, and less time is available for residents to interact with patients and to learn about the etiology of disease, the rehabilitation process, and the long-term effects of the therapeutic interventions (Culpepper 1991, Wartman et al. 1990, Schroeder 1988, Perkoff 1986). Teaching hospitals have become more specialized to compete with increasingly sophisticated community hospitals, thus attracting a patient base with uncommon illnesses and admitting patients specifically for certain procedures (Wartman et al. 1990, Schroeder 1988). Improved noninvasive diagnostic techniques and pressure to contain costs have caused many procedures and processes, including crucial diagnostic and decision-making processes, to be shifted

[4] Between 1982 and 1992, average length of stay in community hospitals declined from 7.6 days to 7.1 days (AHA 1993).

TABLE 11.1

CHARACTERISTICS OF TEACHING HOSPITALS

	COTH Members	Non-COTH Teaching	Non-teaching
Number of hospitals	285	713	4,134
Average Bed Size	585	315	122
Hospital Ownership			
State	13 %	1%	1%
Municipal/county	12	9	30
Church	13	24	10
Other Nonprofit	61	60	44
Investor	1	6	15
Metropolitan Statistical Area			
Under 250,000	7%	18 %	9 %
250,000 - 999,999	30	32	15
1 mil. - 2.5 mil.	27	22	11
Over 2.5 mil.	34	20	7
Not in MSA	2	8	58
Selected Services Offered			
Hemodialysis	86 %	59 %	17 %
Angioplasty	82	47	12
Fertility Counseling	74	26	5
Kidney Transplant	47	8	1

SOURCE: AAMC (1994).

NOTE: Teaching hospitals are short-term nonfederal hospitals.

to the outpatient setting[5] (Culpepper 1991, Wartman et al. 1990, Schroeder 1988, Davidson 1989).

In light of these changes, there is general consensus that the existing model of hospital-based GME has both become less appropriate today and increased interest in providing residency training in ambulatory settings. However, there are barriers to ambulatory training programs. Patients in ambulatory settings are available only for short periods of time, exercise more control over their care, and are perceived to be reluctant to accept care from residents (Culpepper 1991, Schroeder 1988). Teaching in ambulatory settings is less time efficient and less convenient for faculty, and teaching costs are difficult to recover because of generally lower ambulatory charges and GME financing mechanisms, which tie GME payments to inpatient care (Schwartz et al. 1993, Perkoff 1986).

2. Interest in Training More Primary Care Physicians

The rapid growth of managed care delivery systems continues to increase demand for primary care physicians. There is also increasing consensus on the current imbalance in the number of primary care physicians relative to the number of specialists and the need to train more primary care physicians (PPRC 1992, Colwill 1992, Politzer et al. 1991, Bamett and Midtling 1989).[6] This interest in training more primary care physicians can affect site of training and payment for GME.

While specialist and primary care residency programs should include training in ambulatory settings, such training is more important for primary care residents because they must learn to provide a continuum of care, including health promotion and preventive medicine; managing chronic diseases; deciding when hospitalization is necessary; caring for patients after discharge; and

---

[5]Between 1982 and 1992, patient days declined by 20.5 percent while outpatient visits increased by 40.5 percent (AHA 1993). The proportion of patient revenue from inpatient care declined from 82.7 percent to 69.8 percent in the same period (ProPAC 1993).

[6]There is alsoagreement that too many subspecialists are being trained, and that the number of physicians exceeds or will soon exceed the number required to meet national health care needs (PPRC 1992).

developing personal relationships with patients and their families. Hospital-based residencies do not offer sufficient opportunities to learn these skills (PPRC 1992, Culpepper 1991, Perkoff 1986).

The current method of financing GME through patient care revenues does not provide incentives to train more primary care physicians and fewer specialists. The number and mix of residents is determined by a complex decision-making process involving private accrediting bodies, residency program directors, and hospital administrators. At the teaching hospital level, decisions are driven primarily by service needs [Schwartz et al. 1993, Physician Payment Review Commission (PPRC) 1992]. States may affect the number and mix of residents by providing state appropriations to support GME in specific specialties such as Family Practice. In addition, hospital administrators have considerable discretion in how to use Medicare GME payments, and primary care residency programs may not actually benefit from higher payments for primary care residents (PPRC 1991).

3. Training in HMOs

It is increasingly important to involve HMOs in GME. Not only are they growing rapidly, but they also represent a distinct type of health care financing and delivery system, which requires a set of skills that are different from those required in traditional fee-for-service practice. These skills include being able to provide and manage, both clinically and financially, the care of a large group of patients; emphasizing prevention and education; following standardized documentation procedures; and participating in active peer review processes (Corrigan and Thompson 1992). However, different objectives have made it difficult for AMCs and HMOs to cooperate in clinical education. In addition, the current method of funding GME through payments to hospitals is a disincentive for HMOs to provide GME, especially since residents in HMOs do not generate fee-for-service revenues that can help to offset the costs of GME (Moore 1990). The increasing need for more primary care physicians trained for HMO practice raises the issue of where payments for GME should be made.

III. GME COSTS AND THE IMPACT OF MANAGED CARE ON AMC REVENUES

A. GME COSTS

A simple comparison of teaching and nonteaching hospitals costs suggests that teaching hospitals are more costly. For example, in 1991, COTH members had average total costs per adjusted admission of $7,717 compared with $5,409 for non-COTH teaching hospitals and $4,345 for nonteaching hospitals (AAMC 1994). However, the costs actually attributable to GME are difficult to measure because of the joint-product nature of GME in which much education is provided in conjunction with patient care, and it is often unclear whether the two can be separated (Wartman et al. 1990). Therefore, distributing costs between the two is difficult and, ultimately, arbitrary (Hadley 1987). For example, the authors of a study that examined the costs of a family practice residency program using two data sources--the Medicare cost reports and state cost reports--found that reported costs were twice as high in the Medicare cost reports largely because of differences in how resident and faculty time were allocated. In the Medicare cost reports, the time was allocated to education, and in the state reports, the time was allocated to patient care (Barnett et al. as cited in Anderson and Kohn 1993).

Estimates of the costs of GME commonly distinguish between direct and indirect costs. Direct costs are residents' stipends and benefits, teaching physicians' salaries and benefits, the costs of managing residency programs, and other educational and overhead costs directly associated with the residency program. Indirect costs include costs of record-keeping, and increased use of ancillary services by interns and residents (U.S. House of Representative 1993). AAMC (1993) estimated total direct GME costs of $5.2 billion in 1991. However, differences in accounting practices both render the estimates of direct costs inaccurate and make it impossible to compare costs across hospitals. For example, using data from the 1984 Medicare cost reports, the Prospective Payment Assessment Commission (ProPAC) showed that hospital-specific direct GME costs per resident

ranged from $7,500 to $200,000, with a mean of $53,500 (Boex 1992).[7] PPRC (1993) reported a range between $11,000 and $100,000. Anderson and Kohn (1993) found that much of this variation can be attributed to the different ways in which institutions allocate faculty time and, to a lesser extent, overhead costs. These differences are a function of the amount of discretion hospitals have in completing the Medicare cost report, and the application of different audit standards by different fiscal intermediaries.

Unlike direct costs, indirect costs cannot be identified from the accounting system. They are therefore typically identified through econometric studies, which depend heavily on the specification of the model. Dobson et al. (1994) estimated that total indirect GME costs for 1991 ranged from a high of $7.3 billion to a low of $4.4 billion, depending on the specification of the model. Others have estimated that total GME costs range between $5 billion and $9 billion (PPRC 1993). Similarly, estimates of Medicare's indirect teaching adjustment vary, ranging from a high of approximately 9.5 percent to a low of 3.5 percent, depending on the specification of the model and the year of the data (CBO 1989, ProPAC 1989, Thorpe 1988, Anderson and Lave 1986).[8]

In addition to the preceding problems associated with measuring the cost of GME, estimates of the direct and indirect costs generally do not measure the true cost of teaching because they do not account for the benefits derived from the residents who care for patients and substitute for physicians and nonphysician providers (Anderson and Kohn 1993, Hadley 1987). For example, Welch (1987) found that compared with community hospitals, hospitals with residents employ fewer hospital-based physicians and have fewer exclusive contracts with physician specialty groups. Both Welch and Campbell et al. (1991) conclude that in all but the largest teaching hospitals, residents substitute for attending physicians, and direct patient revenues produced by residents offset the costs

[7] FY 1984 is the base year used by Medicare in the calculation of each hospital's direct GME cost per full-time equivalent resident.

[8] The dependent variable in these studies is the log of (l+IRB) where IRB is the intern and resident bed ratio. A Medicare indirect teaching adjustment of 9.5 percent increased PPS payments by 0.095 percent for an IRB of .001.

of teaching. Hadley (1987, 1983) argues that residency training is an example of general on-the-job training, and teaching hospitals therefore incur few to no training costs.[9]

Studies that use econometric methods to estimate the total additional costs to hospitals of providing GME while holding all else constant attempt to measure the true costs of GME. These studies, most of which are fairly old, show that GME increases the costs of the largest teaching hospitals, but they vary in their estimates of the magnitude of the increase, which range from a high of approximately 33 percent to a low of approximately 20 percent (Sloan and Vulvona 1986; Cameron 1985; Sloan, Feldman, and Steinwald 1983).[10] There appears to be less consensus on how GME affects the costs of small teaching hospitals: studies have found cost increases ranging from approximately 10 percent to 3 percent (Sloan and Vulvona 1986; Cameron 1985; Sloan, Feldman, and Steinwald 1983). One study, however, found that employing residents reduces a hospital's costs up to a certain point, after which costs rise (Hadley and Swartz 1989).

B. TRENDS IN GME FINANCING AND SOURCES OF SUPPORT

GME is financed primarily by revenues from patient care. Through the Medicare program, the federal government is the largest single explicit payer of GME costs. Medicare's indirect teaching adjustment compensates teaching hospitals not only for the indirect costs of training residents, but also for costs associated with factors that, while thought to increase the cost of care in teaching hospitals, are not necessarily related to the teaching program(s) per se (such factors might include more severely ill patients and higher staff-to-patient ratios) (U.S. House of Representative 1993). Medicare's 1991 estimated direct medical education payments totaled $1.5 billion, and estimated indirect adjustments totaled $3.3 billion (PPRC 1993, ***Journal of the American Medical Association***

[9]The theory of on-the-job training states that if training is general rather than firm-specific, the trainee bears the full cost of education, typically by accepting a wage lower than the value of the trainee's contribution to the firm's marginal revenue product (Hadley 1983).

[10]The dependent variables in these studies are costs per adjusted patient day, or costs per adjusted admission or discharge.

1993, AAMC 1993). This would account for approximately 2 percent of total spending for hospital care and approximately 9 percent of Medicare PPS payments in 1991 (Letsch et al. 1992, ProPAC 1991). More than 50 percent of Medicare's teaching payments go to the approximately 200 largest teaching hospitals (CBO 1989). In addition, the federal government also finances GME by supporting residencies in both the Veterans' Administration, which finances training for about 10 percent of all residents, and the Department of Defense, which supports about 5 percent of all residents (PPRC 1993).

Other payers, such as Medicaid and private third-party payers, are less likely to explicitly finance GME (PPRC 1993). Studies suggest that some state Medicaid programs follow Medicare payment policies and hence may explicitly fund GME. A 1989 study found that 37 states use Medicaid PPS, 23 of which include some type of adjustment for teaching costs (Peinado and Eisenberg 1989). However, PPRC noted that most Medicaid programs pay hospitals below cost and thus provide little GME support even when their payment methodologies explicitly recognize GME costs (PPRC 1993). Blue Cross and Blue Shield has historically paid hospitals on the basis of their costs and thus may have explicitly paid for GME. While the Blue Cross and Blue Shield Association has no data on how many, if any, plans explicitly pay or have paid for GME costs, the sense is that few do so now (personal communication with Pamela Kelch, June 30, 1994). Teaching hospital charges to private payers, such as commercial third-party insurers, have historically included the direct costs of GME, although these payers do not identity and separately pay for these costs. However, their willingness to continue this practice is diminishing as price competition becomes a more important consideration than it once was (PPRC 1993, Iglehart 1993).

Some states with programs that regulate hospital rates allow higher payments to teaching hospitals, although these payments may not be identified specifically as payments for GME. (Lave 1991). Maryland, which operates the only remaining all-payer rate-settings program, compares the costs of individual hospitals to other hospitals in the same peer group, thus allowing higher payments

to teaching hospitals although they do not explicitly identify GME payments (personal communication, Rod Spangler, November 22, 1994). New York State, which also regulate rates, explicitly identifies direct and indirect GME payments.[11] In 1992, New York Prospective Hospital Reimbursement Methodology (NYPHRM) payments to hospitals included over $1.6 billion attributable to GME (United Hospital Fund 1993).

Other funding for GME comes from state appropriations and grants from the Public Health Service. Many states contribute direct support for some residency programs, especially in family practice. In fiscal year 1989, 33 states provided subsidies for family practice residency programs (American Academy of Family Physicians 1990, Barnett and Midtling 1989). Grant support for residencies in family practice, general internal medicine, and general pediatrics is available through Title VII of the Public Health Service Act. Funding under this act is relatively modest. In 1989, approximately $20 million was granted to family practice residencies, while support for general pediatrics and general internal medicine ranged from $13 million to $18 million (Hanft 1991).

C. IMPACT OF MANAGED CARE ON TEACHING HOSPITAL REVENUE

Because payments for GME cannot be separated from total payments to hospitals for patient care, the latter may be a more relevant measure of support for GME by managed care organizations because hospitals have flexibility in allocating revenues. However, a drop in total revenues may not generate a proportional reduction in GME activity. There is some evidence that hospitals may be more likely to reduce charity care or administrative costs rather than GME activity. For example, Gruber (1992) found that PPO entry and discounts in California led to a decline in hospital net prices but not average costs, with a 50 cent reduction in uncompensated care for every dollar rise in discounts to private payers.

"New York state uses methodology similar to Medicare's in calculating direct and indirect GME costs.

The impact of the growth of managed care on the revenues of teaching hospitals depends on the impact of managed care on three related components of teaching hospital revenues: the price, quantity, and the mix of services purchased at teaching hospitals. Discounts, which HMOs generally negotiate with hospitals with which they contract, can be offset by increases in the quantity of services provided (through increases in the number of procedures, lengths of stay, etc). Similarly, changes in a teaching hospital's patient/service mix can significantly affect revenues to the extent that teaching hospitals cross-subsidize highly specialized tertiary and quaternary care services with routine procedures (Romoff 1993).

1. Price and Quantity

Managed care plans are generally believed to be reluctant to refer patients to teaching hospitals--which generally have higher costs than nonteaching hospitals--unless discounts are negotiated in advance (Iglehart 1993). The literature offers only anecdotal evidence on this issue. For instance, a notice in the *Federal Register* on June 29, 1994 soliciting comments on the effects of managed care organizations on academic medical centers elicited many responses from both managed care organizations and AMCs. The AMCs that responded, all of which have contracts with managed care organizations, perceive that price is the primary criteria managed care organizations use in selecting hospitals to contract with. Among the AMCs that provided information on the average discount granted to managed care organizations, discounts range from 2 percent to 50 percent of charges. About half of these AMCs grant discounts of between 20 percent and 30 percent of charges, and most report that the rates negotiated with managed care organizations are somewhat or significantly lower than charges to other insurers. The willingness of the AMC to offer favorable rates appear to depend heavily on guarantees of patient volume by the managed care organization and management's assessment of the impact of this patient volume on revenues (KPMG Peat Marwick 1994).

Even with discounts, teaching hospitals may continue to be more expensive than community hospitals, and anecdotal evidence suggests that managed care plans are increasingly unwilling to pay a premium for the cachet of being associated with a teaching hospital: an insurance executive in Minnesota believes that employers would be willing'to entertain, at most, a 2 percent surcharge for educational institutions. HealthNet, an HMO in California, conducted a survey of its employer groups in 1992 and found that they were willing to pay less than 10 percent above regular premiums for the full services of the University of California system teaching hospitals (Culbertson 1994). HMOs may also view any marketing advantage that accrues from affiliation with a teaching hospital as more than offset by the potential of attracting sicker-than-average enrollees (Fox and Wasserman 1993). AMCs perceive that managed care organizations refer more seriously ill patients to them but their payment rates only reflect average patient costs (KPMG Peat Marwick 1994).

As with price, the literature provides only anecdotal evidence on the effects of managed care on quantity. For example, Iglehart (1993) mentions that the University of Wisconsin lost 15 percent of its cardiac surgery referrals when a referring clinic became affiliated with a large multispecialty group practice. Studies show that HMO patients have lower hospitalization rates than patients with traditional indemnity insurance and have shorter average lengths of stay for some diagnoses (Bradbury et al. 1991). Hence, it appears unlikely teaching hospitals would be able to offset the discounts granted to managed care organizations by increasing inpatient volume.

2. **Patient Mix**

Little evidence was found in the literature on the effects of managed care on patient mix. The AMCs that responded to the ***Federal Register*** notice had two types of contacts with managed care plans--contracts that cover both routine and specialty care, and contracts for specialty care only. The managed care organizations that responded indicated that they contract with AMCs primarily for specific, specialized tertiary to quantemary services that community hospitals are unable to provide, such as neonatal intensive care, although several noted that they also have arrangements with AMCs

to cover routine services (KPMG Peat Marwick 1994). However, a contract with a managed care organization that covers the full range of services does not necessarily result in referrals from the managed care organization for routine care. Anecdotal evidence suggests that managed care organizations refer patients to teaching hospitals for specialized services: a senior executive of the University of Minnesota reported that HMO referrals to the hospital are predominantly for bone marrow transplants and heart/lung transplants (Culbertson 1994); in a presentation at a meeting of the Association of Academic Health Centers, the executive vice chancellor of the University of Kansas Medical Center noted that patients are referred for complicated quaternary care services such as heart or lung transplants (Clawson 1994); the AMCs that responded to the *Federal Register* notice indicated that managed care organizations are more likely to send them patients who require a high degree of specialized care than patients who require routine care (KPMG Peat Marwick 1994). Some of the AMCs expressed the belief that managed care organizations contract with them for marketing purposes but not necessarily for delivery of care (KPMG Peat Mar-wick 1994).

3. Graduate Medical Education

We found nothing in the literature on the direct effects of managed care on GME financing. Some of the managed care organizations that responded to the *Federal Register* notice indicated a willingness to pay a share of the costs of GME but they strongly emphasized that in a competitive market, these costs must be equitably distributed across all-payors, including government and traditional insurers. An all-payor fund for GME would be acceptable to these managed care organizations (KPMG Peat Marwick 1994).

IV. GME IN HEALTH MAINTENANCE ORGANIZATIONS

HMO involvement in GME can take several forms: HMOs directly involved in GME have either been approved by the Accreditation Council for Graduate Medical Education (ACGME) to serve as a sponsoring organization of a GME program, or they have formal agreements with teaching hospitals to serve as an ambulatory care rotation site. HMOs can be indirectly involved in GME in two ways. First, HMO physicians can teach residents at hospitals on the HMO's time or on their own time, or if they are part of a larger system that is formally involved in GME (Corrigan and Thompson 1991). Second, HMOs can sign provider contracts with residents or faculty of residency programs (Corrigan and Thompson 1992).

A 1990 survey found that 15 percent of HMOs are directly involved in GME, the majority of which serve as a rotation site for an AMC or teaching hospital (Corrigan and Thompson 1991). Staff and group model HMOs are more likely to be involved in GME, as are larger and older plans. While HMOs are more likely to be involved in the training of residents in primary care specialties, they are also involved in the training of residents in other specialties (Corrigan and Thompson 1991).

In a study of 23 HMOs, Felt et al. (1994) found that in most of the HMOs currently involved in GME, the arrangements are generally initiated by the physicians rather than the plans. These plans do not sponsor GME programs or have formal agreements with teaching hospitals to serve as ambulatory care rotation sites. Instead, the plans allow a small number of residents to rotate through affiliated medical groups or staff model centers because the physicians want teaching roles and the plans want to keep the physicians satisfied. The study suggests that HMOs are not more involved in GME for two main reasons: the higher costs associated with teaching and the relatively low expected benefits; and the role of the network/IRA plan as a contracting/financing organization rather than a service delivery organization. In addition, the historic lack of association between the medical schools and HMOs, and space constraints in group or staff model plans, are also barriers

to greater involvement in GME. However, more than half of the HMOs visited expressed an interest in increasing their involvement in GME for recruitment purposes, to help train good primary care physicians, and to increase recruitment and retention of physicians who want to teach.

A 1990 survey of primary care residency programs found that 64 percent of the family practice residency programs have provider contracts with HMOs, compared with 28 percent of the pediatrics residency programs and 24 percent of the internal medicine residency programs (Corrigan and Thompson 1992). The authors postulate that provider contracts are probably more common in family practice because (1) family practice programs place greater emphasis on training in ambulatory settings than do most other specialties; and (2) about two-thirds of a family practice resident's ambulatory experience involves the provision of longitudinal care in a family practice center. In addition, family practice residents are more likely than residents in internal medicine or pediatrics to be responsible for the majority of HMO patient encounters (Corrigan and Thompson 1992).

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APPENDIX B

CASE STUDIES

APPENDIX B.l

SAN DIEGO

CASE STUDY

FINANCING OF ACADEMIC MEDICAL CENTERS AND GRADUATE MEDICAL EDUCATION UNDER COMPETITIVE SYSTEMS WITH MANAGED CARE:

THE SAN DIEGO MARKET

September 1994
Revised November 1994

by

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SAN DIEGO

The purpose of this case study is to describe the structure of graduate medical education (GME) in the San Diego market, how it and its associated academic medical centers (AMCs) are financed, and how financing has been affected by the growth of competitive systems and managed care. The case study is based largely on both information obtained through interviews with market participants in July 1994 and documents.[2] In the discussion that follows, we review the characteristics of the San Diego market; the structure, history, and financing of graduate medical education in San Diego; the changes introduced as the market has become more competitive; and the responses this has generated at the University of California, San Diego (UCSD). We conclude with the lessons drawn from this case, which is one of a series of three conducted as part of a larger study of these issues in graduate medical education.

A. THE SAN DIEGO MARKET

The San Diego metropolitan area ranks 16th nationwide in population (2.5 million in 1991, 2.7 million on July 1, 1993). The area is relatively self-contained, bounded by the ocean, the desert, and Mexico, and having an identity separate from Los Angeles even though the two are within a few hours of each other and are part of the consolidated MSA. With 6.4 percent of its population black and 7.9 percent Asian and Pacific Islander, and with 16.1 percent Spanish speaking, the area is one of the more heterogeneous in metropolitan areas in the country. The 1989 per capita income of $16,220 and 11.3 percent below poverty place San Diego in the top 14 percent of metropolitan areas, though, as with many other cities, there are marked disparities across the region. The population in the San Diego region grew rapidly during the 1980s. However, the local economy has been weak for the past three years, resulting in a net outmigration and one of the lowest population

[2] These sources are summarized in the reference list. We do not specifically cite sources for data as they were often included in materials provided by those we interviewed, and the original sources are often not clear.

growth rates from mid-1992 to 1993 (1.1 percent). The unemployment rate in 1993 was 7.8 percent. We were told that San Diego's employers tend to be small,[3] the largest employer being the University of California. The population is young compared with some other areas: less than 10 percent of the people are age 65 or older compared with 12.5 percent nationally.

San Diego is not as mature a managed care market in years of experience as Los Angeles, but managed care penetration is high and growing, and the system has been rapidly consolidating. According to market data for the entire population in 1993, 30 percent were in commercial HMOs, 40 percent were in noncapitated plans including Medicare, 4 percent were in Medicare HMOs, 2 percent were in Medi-Cal HMOs, and 23 percent were uninsured. By 1997, the projections are that the share of both the private and publicly insured population in HMOs will grow to 56 percent in HMOs, 24 percent in other insured arrangements and 21 percent uninsured. Virtually all those covered by commercial insurance are now in some form of managed care (HMO or PPO). The key distinction in the marketplace is between capitated plans (HMOs and related forms) and all other coverage; the former are viewed by most actors we interviewed as more effective in controlling utilization and cost and as the emerging dominant model. Because the term "health plan" is typically used to characterize HMOs of diverse types in California, we use it interchangeably with the term HMO.

While the managed care market is fragmented into many HMOs, the delivery system has become consolidated into a small number of entities that actually manage and assume risk for care under contract to HMOs. Kaiser, with an enrollment of about 370,000, primarily uses its own dedicated provider network and so is not part of some of the dynamics discussed in this case study. The main emerging competitive health systems are Sharp, Scripps, UCSD, and Health First. There is some discussion of a merger between Scripps and UCSD, which along with Sharp, are the main competitors of Kaiser. Hospital systems have been more dominant in network development, and

[3]We exclude those employed by the federal government through the U.S. Navy in San Diego, since their health system is largely separate.

hospitals and their affiliated medical groups are much more integrated here than in many other markets. By 1991, only 27 percent of all hospital discharges were from hospitals not afflliated with systems, down from 62 percent in 1981. The Sharp system has had a particularly noteworthy effect on the market since 1985 when it acquired Reese Stealy Medical Group and began to build an integrated delivery system. Sharp is viewed as a strong low-priced competitor that has become increasingly influential in the market as it has absorbed previously independent competitors. In contrast, Scripps Health, which was formed by unifying the nationally respected Scripps Clinic (including Green Hospital) with the Scripps Memorial Hospitals, has had considerable difficulty integrating the two very disparate cultures in each institution, weakening its position in the marketplace. Historically, Scripps has represented "the last bastion of the fee-for-setvice system," but it has been making the transition to managed care.

The major health plans contracting with these entities include Health Net, PacifiCare-Secure Horizons, Aetna Health Plans, CaliforniaCare, TakeCare, PruCare, FHP, and CIGNA. However, Kaiser accounted for about 40 percent of the commercial enrollment in HMOs in 1993, with only Health Net and PacifiCare having more than 100,000 commercial enrollees. We were told that employers want health plans to include at least part of each health system, and so there are few differences in provider networks to distinguish the health plans other than Kaiser. We were also told that the system is very competitive, with declining lengths of stay and small price increases. Plans were said to be "desperate to buy market share." There is a consensus that the San Diego market is cost driven, emphasizing price even though quality is cited. However, as one individual noted, the price focus may also reflect the absence of wide variation in quality across systems, their affiliated hospitals, and providers. Most view the price competition as troublesome, though one senior health plan official said it was "very satisfying and raised questions about the level of the original prices."

Within the market, there appears to be consensus that the San Diego area has too many hospital beds and too many specialists, and possibly too many physicians overall. In 1990, there were

5,637 beds (5,750 in 1992) with a 62 percent occupancy rate. There are 297 physicians per 100,000 individuals compared with 220 nationally. Sixty-five percent of physicians are specialists. As one UCSD interviewee noted, "We trained our competition. Few specialized services are provided only by UCSD or by any other system. In fact, in one analysis of services in the first half of 1993, UCSD accounted for only 7 percent of tertiary cardiovascular surgery (DRG 103-111, 120, 478), 24 percent of tertiary gastrointestinal surgery (DRG 191), 22 percent of tertiary oncology (DRG 10-11, 172-173, 318-319, 400-414, 473, 481), and 20 percent of tertiary trauma services (DRG 484-487). While specialists trained in California have historically been able to remain there, we were told this has become much more difficult in some specialties. For example, there are no anesthesiology or radiology positions, and the market for pulmonary medicine and gastroenterology is shrinking. In fact the squeeze on specialists in the San Diego market with HMO growth recently received national attention (The *Washington Post,* July *17,* 1994).

The UCSD system sees itself as the major provider of care for the uninsured and Medi-Cal population, although others are involved, particularly Children's Hospital, which is said to obtain 58 percent of its business from Medi-Cal. UCSD's major hospital began as the former county hospital. However, its future role, which is less certain, is a concern at UCSD. Medi-Cal is in the process of implementing a major managed care initiative. Those interviewed expect the San Diego Medi-Cal market to become considerably more competitive as this new arrangement takes shape. Thirty percent of the Medicare market is already enrolled in HMOs in San Diego.

The San Diego market shares with other urban areas of California a longer history of managed care and higher managed care penetration than in most other parts of the country. San Diego, Los Angeles, and the rest of Southern California appear to have a more competitive environment than does Northern California. However, the San Diego market is not regarded as costly or competitive as Los Angeles, where the market was described as "a firestorm virtually out of control" over the past three to six months. Hospitals and physician groups in San Diego are much more integrated than

they are in Los Angeles. In San Diego, managed care contracts are much more likely to involve shared risk across systems, including hospitals and physicians. Los Angeles HMOs negotiate with physician groups independent of hospitals. The physicians are much stronger than the hospitals, and the mega-groups in which they are organized are not as loyal to individual hospitals. As in San Diego, hospitals in San Francisco appear dominant, but the San Francisco market is less consolidated.

B. GRADUATE MEDICAL EDUCATION STRUCTURE AND FINANCING

1. History and Structure of the UCSD School of Medicine

The San Diego market is unusual for its size in terms of its relatively limited history with teaching programs. The UCSD School of Medicine was only approved by the Regents of the University of California in 1962 and enrolled its first class in 1968 (the university was established in 1958). Before then, aside from the San Diego Naval Regional Medical Center, graduate medical education was largely restricted to about 45 residency positions associated with the County Hospital.

The dean of the medical school is also the vice chancellor for Health Sciences and reports to the chancellor. The school has a strong base in the basic medical sciences; with many basic medical scientists incorporated directly in the clinical departments of the medical school. In 1993-94, there were 503 ACGME-approved residency positions, 10 preventive medicine residents, and 94 other clinical trainees. Officially, 32 percent of residents are in primary care specialties (including ob-gyn), but a portion of these, especially in internal medicine, are likely to go on to receive subspecialty training. From the start, UCSD was oriented toward research, reflecting the national and scientific philosophy at the time the school was founded. It ranked ninth nationwide in federal direct-cost research support and was in the top five per full-time faculty member. In contrast, it is only about average in the number of medical students (122 per year and about 500 overall) and ranks 32nd of 126 in clinical revenue. As in many other medical schools, power rests in the clinical department chairs, though medical school and graduate training are mainly not department based.

UCSD trains its residents at UCSD Medical Center, with its two hospitals (Hillcrest and Thornton), and in the Veteran's Administration Hospital located on campus. There is an affiliation with Children's Hospital for pediatrics. Residents basically rotate through a number of the affiliated facilities (as appropriate), giving them a diverse educational experience. The director of hospitals and clinics is relatively autonomous (subject to constraints of the UC system) and powerful, reporting to the chancellor for fiscal matters and to the vice chancellor/dean for programmatic matters. The major UCSD hospital is Hillcrest, which is licensed for 460 beds, operates fewer, and has an average daily census of under 300. Hillcrest was originally the county hospital. It served first as the clinical facility for UCSD Medical School under contract and was later converted to an academic medical center when a bond issue to build a new medical center on campus in La Jolla failed to materialize. The second hospital--Thornton in La Jolla--has been opened only recently after many years of delay. In the mean time, the health care environment changed, and hospital use declined. Thornton has 120 beds but operates only 60. Though its average daily census is in the 20s, it has an active outpatient service. A striking and well-equipped facility, Thornton was conceived as an important revenue base that would enhance the competitive position of UCSD. However, it is located almost across the street from the Scripps facilities and is a source of considerable resentment on the part of other providers.

UCSD has a long-standing program in family medicine, which began in 1974. Until recently, it had the capacity to train 18 (6 residents in each of the 3 years of training) but was just expanded to a first-year class of 8, with total enrollment expected to be 24. About half to two-thirds of the training is in the ambulatory setting. Planning is underway to establish two community programs with about 18 residents each. These satellites are required, since the current program is at capacity. In contrast, there are 90 residents in internal medicine in a program historically oriented to specialization and inpatient training.

2. Financing of Graduate Medical Education at UCSD

The School of Medicine and affiliated hospitals are involved in financing medical education at UCSD. The same faculty are often involved in both undergraduate and GME at least in the clinical program. The School of Medicine supports undergraduate education, most faculty costs for graduate medical education, and one-third of the cost of UCSD-based residents. The UCSD Medical Center actually pays the salaries of the residents and assumes two-thirds of the expense along with the other associated direct and indirect costs.

With a total annual operating budget of $250 million, the School of Medicine has a full-time faculty of 650, approximately 200 of whom occupy tenure-track positions at least partially funded by the State. State funds of $25 million support only 10 percent of total school expenditures. Annual research expenditures of $130 million account for 52 percent of the budget; the clinical activity of faculty through the UCSD Medical Group contributes $66 million (27 percent); other activities of the faculty, including clinical service and research at the affiliated Veterans Administration Medical Center, administrative activities at UCSD Medical Center, continuing medical education, andvarious service activities, account for an additional $22 million (9 percent). A variety of miscellaneous sources, including private gifts, provide the remaining 3 percent. In FY 1992/93 the UCSD School of Medicine ranked 9th nationally in the amount of federal research direct-cost funding it generated and among the top five schools in federal research funding per full-time faculty member. The school has no overall budget, since each faculty member is responsible for his/her own grants. At UCSD, faculty salaries are paid directly by the School of Medicine, which differs from some other AMCs. Of the $78 million in faculty salaries, $46 million is funded by clinical revenue, $14 million by state funds, $16 million by grants and contracts, and $2 million by other sources.

Over the past ten years, the expense base of the UCSD medical school has increased almost threefold. This basically reflects the growth in research grants and clinical staff which, in turn, have created the opportunity to expand patient care revenue, which in turn, is used to underwrite

additional trainees and fellows. In contrast, state support represents a declining share of the medical school's fiscal support and has increased at a much smaller absolute rate. More specifically, since 1982-83, research grants have grown from $35 million to $117 million and from 45 percent to 52 percent of the school's budget. Funding from the faculty practice has remained a relatively steady one-third share (going from $25 to $75 million and 31 percent to 33 percent). State appropriations have increased from $19 to only $32 million, or at a much slower pace than other revenue streams. They thus now account for 14 percent versus 24 percent of the school's support. The amount of state support was originally pegged at fixed medical-student-to-faculty and resident-to-faculty ratios to a stipulated faculty step level (e.g., Assistant Professor 3) stipend. Residents were funded at 40 percent under the assumption that this is the amount of time spent teaching. The number of trainees used in calculating financial contribution was limited to those at UCSD hospitals and capped. State funding for faculty has not been the limiting factor in the number of residency positions, which have grown until very recently when clinical revenue also became tighter. Beyond its fiscal impact, the erosion of state support is of concern to the school, since these funds are the most flexible share of support.

The amount of UCSD medical school expense that supports undergraduate or graduate medical education has not been analyzed and it would be difficult to separate the two. Incentives to develop such information are limited at UCSD, where tuition is not in the medical school budget. This arrangement differs from those at private medical schools and some other public institutions. Compared to some other schools, the medical school at UCSD may absorb a higher share of the cost of faculty salary for training. This expense is mostly not in the direct cost base used to establish the 1983-84 Medicare baseline for computing direct GME pass-through payments. This reflects the fact that UCSD pays faculty salaries through the medical school, with the teaching hospital clinical accounts showing only limited contributions to these expenses. Other selected AMCs may pay faculty salaries directly. While UCSD has been involved in litigation on this issue, a recent decision

for Jefferson Medical College suggests that school is unlikely to prevail. UCSD perceives itself to have been at a disadvantage because of its relative youth and lack of development when the Medicare base was set.

The UCSD Medical Center is the major engine of the UCSD "clinical enterprise," generating most of the revenue. Of the 509 residencies, 319 have their primary base at the university hospitals, 129 at the VA Hospital, and 61 at community hospitals. The hospital pays two-thirds of the residency cost and the rest is paid by the medical school with state funds that pass through automatically to the Medical Center. The percentage has been decreasing because of extramural funding for subspecialists in medicine and pediatrics. Thus, residency funds do not flow through the medical school. Revenues from patient care are the source of hospital payments to residents. The hospital estimates that the direct teaching costs for house staff, benefits, and supplies are about $10 million of a $250 million budget, or 5 percent. Others put the figure at perhaps 10 percent, taking into account faculty salaries. Indirect costs, which have not been analyzed, are viewed as including extra tests, duplicate services, higher medical records demands, and the like.

3. Other Graduate Medical Education in San Diego

Other than the UCSD system, there is only limited graduate medical education in San Diego. Seeking to enhance its recruitment opportunities and to develop the kinds of primary care physicians it needs to staff its system, Sharp initiated a family medicine residency program in 1994. Sharp had previously tried to interest UCSD in this effort, but for a variety of reasons (including competitive ones), UCSD did not respond. Scripps has no residency programs.' The Kaiser system has some residency positions, though for historical reasons, its main training programs are in the Los Angeles part of the region. UCSD has recently affiliated with the Kaiser family medicine program in Fontana (in the Los Angeles market), though the impetus was largely the desire to show a larger share of primary care resident positions to the state legislature. UCSD does rotate 15 resident FTEs to Kaiser.

C. MANAGED CARE CONTRACTING AND PATIENT CARE REVENUE WITHIN THE UCSD SYSTEM

1. Organizational Relationship Between the Hospital and Medical Staff

Faculty at the UCSD School of Medicine practice primarily at the UCSD Medical Center and the Medical Center is staffed primarily by School of Medicine faculty (i.e., UCSD traditionally has had a closed faculty). Although the closed nature of the medical staff is beginning to change somewhat as the system responds to competitive pressures, there has been general consensus that while many community-based physicians have privileges at the hospital very few actively practice there. As is typical, a "town" and "gown" environment evolved in which community physicians historically viewed the university as arrogant. This attitude was also fueled by the fact that an important segment of the medical staff associated with other large hospitals were specialists initially recruited for the UCSD medical staff but who left, resentful of the faculty's emphasis on research as opposed to clinical practice. In addition, the county hospital base of UCSD, with its multi-bed rooms and older facilities, discouraged interest among community physicians.

Given this essentially "closed" arrangement, there has been general consensus that managed care contracting should be coordinated across the hospital and medical staff as both are involved in providing care to a given patient. With a few rare exceptions based in unique historical circumstances, the hospital and the faculty medical group contract in a coordinated way with the same managed care plans. Separate contracts are essentially the norm, and each entity has its own arrangements; one major HMO capitates the hospital and medical group jointly through a contract to the latter.

Reporting directly to the vice chancellor, the individual responsible for managed care (a neurosurgeon on the faculty) has an "arm's-length" relationship with the hospital and the chiefs of clinical departments. However, contracting staff are still decentralized in both the medical group (which is within the medical school) and the hospital. Each appears to retain authority to decide what rates to accept.

2. Third-Party Revenue and Managed Care Contracts with the Teaching Hospital

We were unsuccessful in obtaining systematic trend data on hospital revenue by payer over time. The hospital still relies heavily on fee-for-service revenue despite the growth of managed care in the San Diego market. This partly reflects the lower rates of hospitalization within capitated systems and the hospital's role in serving Medicaid, county, and indigent patients (60 percent of patients, though a smaller share of revenue). Historically, the hospital received about 90 percent of charges for those with indemnity insurance, but discounts are now much deeper, or payment is on a fixed per diem basis. Overall, the hospital's loss on operations was $10 million this past year before the disproportionate share payment, which generated a small excess of $2 million over expenses.

Based on the strategy it has developed, UCSD estimates that in 1997, 39 percent of its census will be HMO patients, 33 percent of whom will be commercial; 44 percent, Medi-Cal; and 22 percent, Medicare. With the network it has established, UCSD's managed care enrollment has grown from 15,200 in June 1991 to 65,000 in March 1994. Managed care contracts generally pay on a discounted per diem basis, though one major managed care contract is a full-risk contract through the medical group for both hospital and physician services.

3. Medical Group Revenue and Managed Care Contracting

The medical group, like the hospital, receives the majority of its patient care revenue from fee-for-service contracts, though for both, commercial revenue increasingly comes from PPOs rather than traditional indemnity plans. In FY 94, 36 percent of the medical group billings were either to Medi-Cal (22 percent), other indigents or self-payers (7 percent), a total percent down from 48 percent in FY 89. Medicare represented 20 percent of revenue, and HMO capitation was 14 percent (up from 5 percent in FY 89). PPOs and Champus were 13 percent of revenue. Only 8 percent of billings were to traditional indemnity insurance (down from 13 percent in FY 89). All payers are tightening their payment policies. Traditional indemnity insurance payment has declined from 80 percent to 60 percent of charges. Medicare also has dropped from 50 percent to 42 percent. Staff

say one large PPO pays 55 to 60 cents on the dollar of charges, and capitated plans pay 50 cents but generate more business. In contrast, Medicare pays 42 cents on the dollar, and Medicaid pays, on average, 26 cents, ranging from 16 cents in radiology to 38 to 50 cents in obstetrics. The group expects that the Medicaid capitation rate will not cover costs, citing an estimated physician payment of $26 to $27 per member per month (PMPM) compared with $36 to $37 for a commercial contract. It was not clear to us, however, how the group knew or computed its costs given the complex set of activities in which the faculty are involved, the way in which they are financed and underwrite salaries, and the fact that any revenues accrue to the department and school rather than directly to the individual provider.

4. Specific Forms of Managed Care Contracts

UCSD has contracts with most of the major health plans serving San Diego, including those in both the commercial and Medicare markets. With the exception of Kaiser, the contracts do not specifically target tertiary services but include rates for the range of hospital and physician services. There are also some special contracts (or rates) for selected tertiary services like bums or transplants. Total enrollment does not appear to be capped by the health plans, but the UCSD total is still small in relation to the total enrollment in most health plans. This probably is due, at least in part, to the closed medical staff and the historically small feeder system with community physicians. Through its current strategy, UCSD intends to correct this situation by establishing a network that includes community physicians. UCSD attributes the growth in managed care enrollment to this strategy and to its own increased willingness to negotiate rates and cost-cutting initiatives to support its managed care strategy. UCSD also perceives that its is now more favorably regarded within the community--not only by providers but by patients as well.

For the hospital, discounted per diems are the major method of payment by health plans. Length of stay has been dropping, and increases in per diems have been moderate, so these rates have become tighter over time. The HMOs we talked with used their negotiated rates rather that

the PPS rate for enrolled Medicare beneficiaries. The medical group is typically paid on a capitated basis for the physician side. Health plans generally do not pay the UCSD hospital or medical group a higher rate for potentially unique costs associated with graduate medical education. Health plans in turn do not perceive such an increment to be feasible in the cost competitive San Diego market. It appears that the willingness to pay an increment has been diminishing over the last two to three years. To the extent that a premium is paid, it is typically justified by the plan and hospital on the basis of adverse selection. It is also typically relatively small (e.g., 5 to 8 percent of the physician capitation rate). One exception is selected tertiary services that, like bum, are unique and not really discounted. When the health plan is not simultaneously buying the full range of products, the hospital is in a stronger negotiating position, but these specialty services typically represent only a very small share of the premium dollar of HMOs (e.g., 7 percent).

The trend in San Diego appears to be moving toward both capitated arrangements with provider systems and full as opposed to partial risk arrangements. In Medicare, these arrangements are expressed as a percentage of AAPCC because of uncertainty over the allowed federal increase each year. The push for risk arrangements appears to be coming from the health systems, not the HMOs. The view of health systems appears to be that because they manage care, they should get the full benefit of any savings. They seem to be less aware of or concerned about the possibility of losses and the associated potential risk. It was not clear to us that all systems were equally well-structured to assume such risks. Conversely, health systems are starting to raise questions about the amount of premium reserved by the health plan to finance services, expansion, or profits rather than turned over to them in a capitation rate. The larger systems obtain fewer services from the health plan and tend to have a capitation rate that is a higher percentage of premium.

Contracts between health plans and provider systems appear to be negotiated on a less-than-annual basis. Consequently, the current contract specification may not always fully capture the current market. For example, one plan noted that it chose a hospital for a particular service when

that hospital was really the only quality provider of that service. The price was high, but the health plan's selection criteria and physicians were more responsive to quality than price for contracted services. But because there are now more hospitals that meet these criteria, the same HMO may have made a different decision today.

5. Medicare and Medicaid Managed Care Contracting

Medicare is a major source of funding for GME because of direct and indirect GME payments and because many AMC patient loads quality them for disproportionate share payments. However, these payments assume that the hospital is paid using the fee-for-service model of traditional Medicare. On average, Medicare spends as much, all else being equal, in disproportionate share and GME funds under capitated risk arrangements. However, when the money is received by the health plan as a capitation, distribution of the funds across hospitals in a market is determined by the health plan and how it uses and pays hospitals for Medicare beneficiaries enrolled in its plans. Thus, the distribution of funds across hospitals is likely to differ from that of a traditional Medicare payment policy, since health plans tend not to distinguish among types if hospitals (rather than services) in rate setting.

UCSD administrators perceive their system to be less dependent than other AMCs on Medicare revenue because the elderly represent a smaller share of the San Diego market (17 to 18 percent) and because the Medical Center was late in entering the Medicare market. Disproportionate share payments, however, are said to make the difference between a negative and positive financial position. We were not able to get detailed data from the hospital or all health plans but it appears from what we did find out that health plans pay their own negotiated rates for hospitalized Medicare beneficiaries rather than whatever Medicare pays. Except for selected specialty tertiary services, payments are typically for smaller units rather than per case, and with less diagnostic adjustments than the DRGs. UCSD assumes that this arrangement results in lower payments per case than Medicare, but it has not conducted an empirical analysis to confirm this view. If payments per case

are, in fact, lower than in Medicare, this would imply that the growth in Medicare risk contracting has reduced Medicare GME funding available to UCSD. This does not necessarily imply that HCFA is spending any more than it would under fee-for-service in San Diego, but that the distribution of payments is affected. Total Medicare spending effects are determined by the extent to which the distribution of Medicare risk revenue across hospitals in the market is similar to what would have occurred under fee-for-service.

Individuals in San Diego have concerns about how county-specific payment rates are set under Medicare (the "AAPCC") (Palsbo 1990, 1991). For example, they question real or perceived disparities in payment across payment among California counties in relation to San Diego. Weaknesses in ways of accounting for differences in Medicare spending across counties also have increased the instability of Medicare rates in any given county from year to year. UCSD is partly affected by this uncertainty because some HMOs establish their Medicare capitation rates, especially for the medical group, on the basis of a percentage of the AAPCC rather than a fixed amount.

Medi-Cal is an important source of revenue for UCSD. This revenue is heavily based on fee-for-service payments because the Medicaid managed care initiative is still being implemented. We heard much about "competition to lose less money" in San Diego. Some referred to the low fee-for-service rates Medi-Cal pays but these payments are still viewed (at the margin) as useful in covering fixed costs. The expectation is that there will be extensive competition for Medi-Cal business under the managed care initiative. There is concern that a potential capitation rate of about $78 PMPM is not enough to cover costs and that this is much lower than rates elsewhere (e.g., a purported comparable figure of $134 was cited for Rhode Island). In response to this concern, some health plans are developing strategies that will involve a narrower provider network than they otherwise use and that focus on enhanced management. While UCSD has not reached a final decision on its strategy for competing in this market, our impression is that most view the Medicaid patient base

as essential to the university's teaching objectives. In addition, low capitation rates were still seen as better than the 9 to 10 cents on the dollar UCSD receives from indigents.

More than one respondent at UCSD illustrated their concerns by referring to the UC Davis experience with Medicaid managed care. The medical center originally had 35 to 50 percent of the Medicaid market, but only 3,500 of the first 75,000 individuals were said to select UC Davis when offered a choice between it and a Blue Cross/Blue Shield product. To the inhabitants of San Diego, it was not clear whether these numbers reflected short- or long-term patient preferences (i.e., would enrollees switch back next year) or patient awareness about the provider network restrictions associated with their choice (i.e., did they still use UC Davis, which would not be paid).

D. EFFECTS OF MANAGED CARE AND COMPETITION ON UCSD AND GME IN SAN DIEGO

It is necessary to consider three issues when thinking about how UCSD has been affected by managed care and competition. The first is the distinct difference between an analysis of effects on the UCSD Medical Center and an analysis of how the same forces affect GME in San Diego. Certainly the two overlap (UCSD Medical Center being the main sponsor and location for GME), but each analysis could generate a different policy conclusion.

The second is that isolating the effects of managed care from those of other health systems in San Diego cannot be done easily or definitively. For example, the main impact felt by the medical school comes through the erosion of clinical revenue streams that are attributable more to Medicare's resource-based relative value scale system than to managed care. The question is whether managed care is indirectly creating an environment that allows and creates incentives for all payers to be cost conscious or whether the growth of managed care is merely a reflection of this cost consciousness, acting as a "lightning rod" for concern.

Third, it may not be possible, partly because disparate policy objectives for AMCs and GME are intertwined, to unambiguously interpret effects and decide whether they are positive or negative.

For example, up to this point, clinical revenues have continued to increase at UCSD--it is the rate which has slowed. Because UCSD is still relatively new to this process, the next few years may better indicate the true effects of managed care. Different conclusions on effects may be drawn depending on which measure (dollars or rate of change) is the focus. Furthermore, the slowdown in clinical revenue, which (along with the UC generalists initiative in response to legislative concerns) has apparently contributed to some redistribution of residency emphases, has also increased the clinical burden on existing medical faculty, thus detracting from their research objectives. Hence, falling clinical revenues have both positive and negative effects.

1. Effects on the UCSD Health Care System

As San Diego's market has become more competitive, length of stay (already low as in other parts of the west) has dropped, with fewer total patient days. We learned of one group that had 90 days per 1,000 commercial members and 750 days per 1,000 Medicare members. Overall the average length of stay in San Diego in acute hospitals is comparable to that in California (4.6 vs. 4.8 respectively) and both are lower than the national average of 7.1 days (OSHPD, personal communication November 1994; AHA, personal communication November 1994).[4] We were also told that the culture of the Medical Center, at least in the inpatient setting, had changed from one in which faculty and residents question why procedures are not used to one in which they question why they are used. Residents were said to compete in efficiently managing patients to reduce their length of stay.

For the university hospitals, this rapid drop in length of stay has had a dramatic effect on occupancy rates and system needs. A 1992 APM study concluded that UCSD would need 220,000 patients to maintain the financial viability of its two hospital systems. Now, two years later, UCSD

[4]Figures for San Diego and California are for 1993. The national average figure is from 1992, the most recent available.

estimates this number has doubled to 440,000. Maintaining hospital revenue is of particular concern, since UCSD has considerable debt associated with its new hospital, Thornton.

Reductions in inpatient stays have also had a major impact on GME. Short stays make it both impossible to follow the progression of disease and difficult to teach because patients are not "in the beds" long enough. This situation increases the importance of outpatient training, but there are many issues and problems associated with moving in this direction, and they only partly relate to managed care.

It is not clear to us how the changes in the San Diego market have in the short run affected the financial viability of hospitals. The reduced length of stay and decreased number of total days have decreased revenue. Market pressures have certainly "raised the consciousness" about costs as payment rates have become tighter, but short-term effects seem, if anything, more related to trends in noncapitated services, particularly Medicare and Medicaid. We did not hear individuals at UCSD or elsewhere say that quality was eroded. The market also does not appear, as yet, to have greatly affected UCSD's service to the indigent. Overall, it appears that the greater concerns involve not short-run effects, but the long-range implications of the system-wide changes now underway and how these may affect the UCSD's health care delivery system and status in the future.

The medical school faculty, through the medical group, seem to have been more affected in the short term, but it is not clear whether these effects are associated with growth in managed care or whether they are related to the economy in general and to concern for cost containment. There seems to be more pressure on faculty to provide clinical services that generate revenue in order to offset losses in state funds and greater competition for research dollars. Some pressure on faculty is related to the effects of health reform on the pharmaceutical and biotechnical industry. More than one faculty member indicated, "They have to work harder for fewer dollars." When residents or fellows are not available to provide care, faculty may be more heavily depend on. Faculty also appear to perceive that they are being called upon more often. For example, UCSD's neurosurgery

clinical resources have gone from six to three full-time equivalents. To support four faculty, three were said to have to work full time, leaving little time for research and teaching. Family practice faculty perceive they are particularly burdened by clinical responsibilities, since they are less likely to be able to obtain research support to offset revenue needs, and most resources are still allocated on a decentralized basis by each department.[5] In addition, regulatory requirements to document oversight of residents have grown, thus increasing demands on faculty. Some perceived a potential outflow of faculty spurred by clinical demands that offset the positive incentives for faculty members to accept salaries that are markedly lower than what they would earn in private practice. In addition to research, these include the value placed on heading a residency program and particularly training fellows in your specialty. If the criteria are changed for determining residency and fellow slots, these incentives would be further eroded.

In response to competition, the Medical Center, under the leadership of the hospital director but involving key constituencies throughout the center, has mounted two major related strategic initiatives. The first involves a major cost reduction program. UCSD analysis showed that on a case mix-adjusted basis and accounting for severity, its costs were 35 percent higher than community hospitals. UCSD once perceived that even with costs of 10 to 15 percent higher, it could remain competitive, but it is now less certain of that. A $70 million dollar "cost-competition strategy" was developed and has so far generated, we were told, $45 to $53 million in reductions. With these reductions, the hospital has been able to become more flexible in negotiating with managed care plans. UCSD perceives that this flexibility plays an important role in generating more positive reactions from the market, which seems to be confirmed by some of the managed care plans we interviewed. The second, and more far reaching, response has been to develop an integrated health care network (UCSD Healthcare Network) in collaboration with community-based physicians. This entity contracts with health plans. Its core consists of the two UCSD hospitals and three UCSD

'Family practice faculty do have access to funding for health services research though less so to the bench research funds used by other departments.

medical group practices. However, the emphasis is on UCSD's efforts to build a community-based network of primary care physicians who will balance the UCSD case-mix to better level the playing field and increase the volume of tertiary and inpatient referrals. In that these physicians remain independent, UCSD does not "own" them. If UCSD received all referrals from the network, it would need 307,000 enrollees and 170 full-time primary care providers to meet the estimated revenue requirements of its system. Since this is unrealistic, UCSD estimates that 321 primary care providers are needed. Through several important steps, UCSD has been successful in network development, and it is affiliated with 340 not necessarily full-time physicians. A major emphasis is now on maintaining and strengthening these relationships.

UCSD perceives its accomplishments positively, and staff appear to be relatively optimistic about success. As competition heats up, UCSD's previous weaknesses may now be perceived as strengths in the community. For instance, we were told that because of its university base, UCSD is now more trusted by the community, which perceives that UCSD will not allow quality to suffer in this high-priced competitive market. In addition, the aggressiveness of competitors has, in turn, made UCSD appear to be more reasonable. In the important area of capital, UCSD perceives itself to be at a major disadvantage compared with its competitors. Because it is a public institution, UCSD does not have access to the same philanthropic support or capital markets that competitors do. UCSD also faces more bureaucratic barriers, which delay otherwise quick responses in a rapidly changing market. UCSD perceives that it is developing the network on a "shoe-string budget" compared with its competition, which is able to spend as much as $40 to $50 million for this purpose. This financial advantage has allowed competitors to "buy primary care practices," i.e., to develop favorable terms with potential primary care providers that encourage their exclusive affiliation with the network.

The UCSD strategy is not without critics, particularly as the university has become a greater face in managed care. Some view as inappropriate UCSD's use of state funds to compete with private entities in the managed care market. They would prefer UCSD to be a "teacher", training

the primary care providers to meet managed care needs and increasing the emphasis on outcomes and other relevant research.

The hospital director and architect of the UCSD strategy, Michael Stringer, appears to be widely respected within the UCSD system. While the UCSD community appears to be generally supportive, this cooperation comes with reservations from a number of quarters. These reservations appear to be offshoots of conflict among the many UCSD goals. One respondent remarked that the network denies funds to competitors but generates dependence on community providers who, rather than UCSD, receive the benefits. The concern is that hospital survival could come at the expense of patients needed by the faculty. Network participation also has generated pressure on the faculty to increase clinical service volume, which conflicts with research goals. For example, if a gastroenterologist is not available for a consultation, the network primary care physician could go elsewhere, which would likely result in surgery being performed elsewhere (if surgery were required) with a commensurate reduction in revenue to the surgery department.

Some are generally concerned that an academic medical center just does not provide an appropriate clinical focus and primary care base for managed care, particularly in a highly organized competitive environment. There is also concern at UCSD about adverse selection: those expressing concern gave examples of a small but much higher-than-average number of enrollees who need highly complex specialty services like transplants, their perception being that these people were steered to UCSD because of its facilities. Management was specifically mentioned at a minimum, if at all. However, it was not clear to us, for example, whether the UCSD fiscal systems at the hospital and the medical group were either sufficiently developed to truly identify costs such that they could effectively negotiate capitation rates or contained appropriate incentives such that UCSD could manage the risk associated with some forms of managed care contracts. We were concerned that there was more focus on the "up-side" than "down-side" of risk-based arrangements.

UCSD does not appear to feel that its survival is at risk, though senior staff note that other AMCs may be. However, without some assistance through health reform, some clinical chairs say it may be more likely that the medical faculty will be shrink, giving way to a greater emphasis on research grants and biomedical pursuits. This will affect the kind of education that is provided.

2. Effects on Graduate Medical Education in San Diego

The effects of the current health care environment are readily apparent in GME at UCSD and in San Diego. There appear to be two types of effects. The first are general effects of managed care and competition. The second is particular effects associated with encouraging a higher proportion of primary care training. The latter has been influenced by managed care and competition but also reflects more broadly motivated direct public policy interventions. In general, these effects have manifested themselves only initially in graduate medical education. Their future form, though still uncertain, is likely to be influenced by the details of health reforms as well as federal and state policy.

The most fundamental effect of managed care on GME occurs through the shift in care to the outpatient setting, increasing the time that residents of most specialties are likely to spend there. We were given numerous examples to show why training in outpatient settings is inherently more complicated and potentially more expensive than training in an inpatient setting. Space (in which residents can observe), which is a problem in the outpatient setting, is not a problem in the inpatient setting. Teams of medical students and residents may be involved in a single encounter in the inpatient setting, but this may not be feasible in the outpatient setting because of space and patient preferences. To the extent that the outpatient settings are decentralized, supervision of residents is also regarded as more of a challenge, particularly with less experienced residents. UCSD has historically used volunteer faculty to oversee certain clinics. The growth of managed care does not so far seem to be making community physicians more reluctant to assume this role, which carries some prestige and is professionally rewarding. However, finding physicians willing to allow residents

to practice with them in their office was viewed as a problem because this is likely to conflict with the pressures to be efficient and financial incentives associated with managed care. In addition, the extent to which patients, accept training in the outpatient setting was not clear. In the inpatient setting, patients were said to perceive residents as a diversion. In the outpatient setting, this positive incentive probably does not exist. In addition, the growth of managed care means that in both inpatient and outpatient settings, trainees are less autonomous in the care provided, since approvals from outside and treatment protocols are more likely. However, this situation also increases a resident's familiarity with the managed care philosophy.

The growth of managed care and competition in the San Diego market appear to be creating pressures that work to the advantage of federal and state interest in redirecting training to primary care specialties. UCSD has not decreased its residency slots, but the emphasis on surgical and medical subspecialist training appears to have diminished somewhat. As the market for specialists tightens, the number of fellows has been somewhat reduced, and more internal medicine residents appear to be following a generalists paths (up to 50 percent now). At UCSD, training has been heavily influenced by a bill filed in the state legislature by Senator Isenberg in February 1992. This bill would require the UC system as a whole to allocate at least 50 percent of its residency slots to primary care training (including ob/gyn), with at least 20 percent in family medicine. UCSD interprets this to be a systemwide, not school-specific, standard and has been working with the four other University of California medical schools to show that it is making an effort to address these concerns and avoid legislation.

The family medicine program has been expanded such that it will have 24 rather than the current 18 trainees. UCSD will double with alternative training sites. Because family medicine emphasizes ongoing ambulatory practice in an organized setting, establishing training programs involves considerable developmental costs and ambulatory infrastructure. Managed care appears to have complicated, beyond any financial effects, the already difficult task of finding training sites

because the market is organized into distinct, competing systems. This creates the potential for conflict if the medical group being considered for training uses a hospital in a different system. Incentives for residents to remain in family medicine may also be diminished if the faculty, who serve as role models, are seen as being dissatisfied with low faculty salaries and a high clinical load for a specialty that is relatively lower paid to begin with. Because family medicine faculty tend to be less involved in research (and less able to secure such funding), their income from clinical work becomes more important in underwriting faculty time for training. This is also true for other primary care specialists. However, at UCSD, family medicine faculty have been relatively successful in securing research funds.

We got some sense that at least some of the larger HMOs are interested in supporting primary care residencies from internal revenue as a means of meeting their recruitment needs. Kaiser has long sponsored such residencies within its system, feels that it breaks even over the three-year training program, and that the cost represents a relatively small expenditure, which can readily be absorbed if the programs can be designed in a manner to be acceptable to the consumer. Sharp has just started an internally funded family medicine residency program to compete better for physician staff with other health plans and to address what it regards as priority training needs not being addressed at UCSD. Currently, a first class of six residents each have entered two programs. Once the program is fully phased in over three years, total program size will be 36 combined. We spoke with one large HMO in the area that now offers no such program but perceives that it has an obligation to have its facilities participate in training. On the other hand, we interviewed others who wondered if HMOs were merely skimming off the more lucrative advanced residents.

An incipient issue that is likely to become more and more prominent concerns the potential for conflict caused by different views about how physicians should be trained. This issue is not specific to managed care but is associated with any form of decentralized training, and differences in perspective are related to what appropriate training involves, what appropriate oversight is needed

in ambulatory and decentralized settings, and how both will be financed. One thoughtful and experienced medical school administrator expressed concern that we could be returning to the "pre-Flexnerian era" of apprenticeships rather than using formal training programs. She perceived a continuing need for medical school faculty to design both a curriculum for training and a structure of quality oversight. While she supported outpatient training as essential, she also saw a conflict between the developmental support it needs and the current cost-conscious environment. There also is a potential problem if the preceptors are to be paid; much of this financing is now provided in the inpatient setting through voluntary faculty, supplementing full-time faculty.

Personnel substitutions may be needed to offset reductions in existing residency slots at hospitals. After UCSD reduced its number of general surgical residents by six, the department eliminated rotations to the emergency room and the orthopedic clinic. A request that the hospital hire a physician assistant is now pending. There is concern for how physician assistants will be financed if the funding for those residents is shifted to other specialties. On the other hand, it is possible that some of these services may not be needed under managed care, especially if more universal coverage increases access for the uninsured.

It is likely to be difficult to address the financial ramifications of a shift to decentralized ambulatory training sites and a higher proportion of primary care. At UCSD, the hospital pays two-thirds of the resident's salary. The hospital is likely to be unwilling to make such payments if the resident is placed in an alternate location. Hospital administrators already perceive that the faculty more than the hospital benefits from residents, since their work generates income to the faculty and frees them to pursue research and other objectives.

E. CONCLUSIONS AND LESSONS

While our analysis is not sufficiently specific to identify the costs of GME, the UCSD system appears to have incurred at least some net cost by participating in this activity. In San Diego's competitive market, purchasers do not appear to be willing to underwrite higher costs for higher cost

providers in managed care if there are lower priced alternatives that meet basic quality criteria. While including AMCs in the network is appealing to some, one HMO that includes them in its network also said that purchasers are not willing to pay more for them. HMOs perceive that UCSD needs to compete with other providers on an even or almost even footing, at least after any adverse selection is accounted for. To accomplish this, UCSD leaders perceive that an all-payer pool of support for GME is essential.

On the other hand, a very real question involves the kind of training any pool should support and how it would have to be structured to accomplish this kind of training. Within the local market, HMOs perceive an imbalance between their needs for primary care and the UCSD medical school focus on specialties. The market appears to be working to create incentives for changing the current specialty distribution of training and practice. However, it is not entirely clear to us that market forces can address distributional issues related to national needs. That is, nationally, there is a certain pool of necessary specialists of debatable size. It probably makes sense to concentrate specialty training by site. Although most markets are not likely to support the costs of these trainees if there are too many of them, a certain number need to be generated nationwide. Unless the cost of training these physicians is distributed across markets in some form, this need may not be met.

It also is not clear how to design an effective program for this purpose: who decides how many residents of which type are needed and which AMCs get to train them? Where does the money come from and where does it flow? At UCSD, providing the money to the medical school would probably prompt clinical chairs to develop a specialty mix consistent with their preferences rather than national needs to the extent that the California legislature does not limit their activities. Providing funds to the hospital, however, would be problematic when an increasing share of training is in independent ambulatory locations.

We asked the hospital director what the rationale for public policy support of AMCs should be when AMCs are viewed as teaching the wrong subjects, when there are few unique tertiary services

provided, and when, given a choice, a substantial share of the indigent voluntarily choose other providers. (This, of course, assumes universal coverage and other mechanisms to provide choice.) He observed that the current situation could be viewed as an overcorrection for a previously very permissive health care policy. AMCs trained their competition, and the system fed on itself because faculty were then motivated to train others who were more like them. His view is that this does not obviate the unique needs that a place like UCSD can meet. He perceives that UCSD has provided a target or goal for the competition to strive for in the San Diego market. The creation of an economic advantage for institutions on the cutting edge in turn creates the means to sustain incentives to develop new technologies. In addition, it is important that there is a critical mass and a balanced approach to training. If there is no regional or centralized process for providing such support, AMCs are likely to respond as UCSD is now, becoming less unique as they sacrifice their distinctive features to survive as they adapt.

Of course, such an outcome could alternatively be viewed as appropriate, depending on one's view of national needs and priorities. It is our hope that this discussion illustrates at least two lessons drawn from the San Diego experience: that public policy issues relating to AMCs and GME are very much intertwined and best addressed together, and that attention to these issues will be very important under competitive systems.

As the nation's policymakers and health care professionals debate the issue of what public policy goals are most appropriate and how they might be achieved, Congress is likely to be asked to consider the challenge faced by AMCs: can they make the transition to a competitive environment as they attempt to respond in a market that may have already made the transition, thus limiting their options. A key question from a policy perspective is whether public policy is enhanced or impeded by funding AMCs in order to assist them in the transition and how, if funding is provided, the transition can be achieved without compromising desired shifts in graduate medical education.

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APPENDIX B.2

MINNEAPOLIS

CASE STUDY

FINANCING OF ACADEMIC MEDICAL CENTERS AND GRADUATE MEDICAL EDUCATION UNDER COMPETITIVE SYSTEMS WITH MANAGED CARE:

THE MINNEAPOLIS-ST. PAUL MARKET

September 1994
Revised November 1994

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This case study was developed under Contract No. 282-92-0044, Delivery Order #6, with the Office of the Assistant Secretary for Health. Any opinions or perspectives are solely those of the author.

MINNEAPOLIS-ST. PAUL

The purpose of this case study is to describe the structure of graduate medical education (GME) in the Minneapolis-St.Paul market, how it and its associated academic medical centers (AMCs) are financed, and how financing has been affected by the growth of competitive systems and managed care. The case study is based largely on information obtained through both interviews with market participants in August 1994 and documents.[1] While the case focuses primarily on the Minneapolis-St. Paul market where managed care is most extensively developed, the case also touches briefly on the role of the Mayo Clinic which is located about 90 miles away and has an extensive teaching program serving both the Minnesota and national marketplace.

A. THE MINNEAPOLIS-ST. PAUL MARKET

The Minneapolis-St. Paul metropolitan area contained 2.6 million people in 1992, ranking 15 nationwide. Minneapolis-St. Paul accounted for 52 percent of the state's 4.4 million residents in 1992. This market serves as a regional center for both rural areas in the state and a considerable part of the Midwest. While the market is often viewed as more ethnically homogenous than most parts of the nation (3.5 percent is Black and 5.9 percent non-English speaking), it includes numerous ethnic groups, including some diverse ones such as the Hmong population. The 1989 per capita income of $16,721 and 8.1 percent below poverty ranked Minneapolis-St. Paul 41st out of 335 metropolitan areas. Minneapolis-St. Paul is home to a number of large national employers such as Honeywell, Digital, and 3M. It also is the seat of the state government and the site of Minnesota's largest state university.

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[1] Written sources are summarized in the reference list. We do not specifically cite sources for all data as some were often included in materials provided by those we interviewed and the original sources are often not clear.

Minnesota leads the nation in health care reform. As one of the most developed managed care markets in the nation, Minneapolis-St. Paul is often the focus of study (OTA 1994). In 1992, more than one million individuals, or 44 percent of the population, were in HMOs. Within the commercial market, a substantial share of the rest of the population is in PPOs. Managed care is also extensive within Medicaid, particularly in Hennepen County (Minneapolis). However, Medicare risk contracts are not currently very common in the Minneapolis market because of perceived inequities in the capitation method (Dowd, Feldman, Muscovice et al. 1993). In total for 1991, 29 percent of hospital days in the Twin Cities was Medicare, 26 percent managed care (including 3 percent Medicare managed care), 22 percent commercial, 14 percent Medicaid, 3 percent uninsured, 3 percent other government, and 4 percent other (Council of Hospital Corporations 1992).

The managed care industry has been heavily consolidated over the past few years. Two plans--Medica (now Allina) and HealthPartners--that were formed through mergers between managed care plans now account for 90 percent of the HMO enrollment. Along with Blue Cross and Blue Shield, they account for 80 percent of the total Minnesota managed care market. Statewide, HMO penetration is 27 percent, with the active HMO markets in the Duluth and the St. Cloud areas in addition to Minneapolis-St. Paul. Managed care activity also is growing, including in the rural areas, in response to the state's health reform initiative, MinnesotaCare, in which integrated service networks are the main form of delivery.

The Minneapolis-St. Paul market has recently been moving to consolidate vertically, with an eye toward creating integrated systems. The two most significant changes were (1) the merger of HealthPartners with Ramsey Healthcare, giving HealthPartners control of the St. Paul hospital and its associated large multispecialty group practice as well as research foundation; and (2) the merger of Health Span and Medica, creating Allina. HealthSpan owns or manages 17 hospitals in Minnesota and Wisconsin and has 45 clinics as well as a 200,000 member PPO.

Minneapolis-St. Paul has historically been a highly competitive market. Price competition, relatively moderate during the past few years, is expected to increase as purchasers become a more important force in a market previously dominated by managed care plans. Last year, premium increases were 7 to 8 percent, and they are expected to be 3 to 4 percent next year, with rates for some groups held steady. The state employees' health plan has been an important influence on the system. Since the mid- to late 1980s, the Group Insurance Program has used a competitive managed care approach in which the state contribution is set by the lowest bidder in each county, a feature that OTA (1994) concludes has increased price competition relative to the fee-for-service system. Since 1989, the low bidder in most counties has been Group Health (now part of HealthPartners). However, Allina was the lowest bidder for this upcoming year, with a rate $10 lower than others and 25 percent below its previous rate. HealthPartners has responded by creating a program that ties salary increases and bonuses for senior staff and affiliated physicians to performance and patient satisfaction.

Another important force in the current market is the business community, particularly the Business Health Care Action Group (BHCAG), which began in 1993 to contract jointly for health care benefits. The BHCAG wanted to collaborate with a single partner on a self-insured basis, emphasizing programs for quality improvement. The request for proposals for this venture contributed greatly to the merger of Group Health and MedCenters health plans to form HealthPartners, the successful bidder. The BHCAG is viewed as having an influence that is far greater than their numbers because of their influence on the market. The structure of the BHCAG initiative also illustrates the philosophy of the Minneapolis-St. Paul market. In general, benefits are fairly comprehensive, and the focus on quality is apparently more genuine than in other markets where it is discussed. However, price competition is still viewed as the dominant influence.

While Minneapolis-St. Paul is seen as a national model for competitive systems, it is, in fact, a reasonably regulated system in which the "components" are highly cooperative, thus distinguishing

education functions rather than directly specifying that a fund be created for this purpose. In our interviews, we perceived considerable support for a collective response to the issue of GME financing, though the many stakeholders in the market had not reached a consensus on the timing and form of this response. Some of those most directly affected were disappointed that the interim report did not go further in specifying a mechanism for achieving their goals.

B. GRADUATE MEDICAL EDUCATION STRUCTURE AND F'INANCING

1. The Medical Education Environment in Minnesota

There are three medical schools in Minnesota (MDH 1994): The University of Minnesota Medical School, which has 869 students; the University of Minnesota Duluth School of Medicine, which has 102 students; and the Mayo Medical School, which has 164 students.[2] The number of graduates from these schools combined has remained relatively steady over the past five years.

In 1992-93, there were close to 2,240 medical residents training in more than 25 institutions in Minnesota. Eighty-seven percent of the institutions were affiliated with one of the major teaching hospitals and belonged to the Council of Teaching Hospitals (COTH), meaning that they had at least four approved active residency programs. These are the University of Minnesota Hospital (U of M), Hennepin County Medical Center (HCMC), St. Paul Ramsey Medical Center (SPR), Veteran's Affairs (VA) Medical Center, Abbott Northwestern Hospital, and Mayo Foundation with its two affiliated hospitals. All but the Mayo Foundation Hospitals are located in Minneapolis-St. Paul. The largest concentration is at U of M with 967 residents, followed by Mayo (985), HCHC (186), and SPR (49).[3] The VA system is regarded as distinct in Minnesota, serving a unique population with federal support. (U of M Duluth has a family practice residency.) About 46 percent of

[2] Technically there are only two AMCs in Minnesota--the U of M and Mayo.

[3] Although Mayo technical appears to have the largest residency program, we present them in this order as Mayo figures represent number of individuals, while all other groups report FTEs.

Minnesota's residents are in primary care specialties: family practice, general internal medicine, general pediatrics (MDH 1994).

MDH attempted to estimate the costs and funding sources for medical education and research in Minnesota. Medical education was defined to include clinical training of physicians, nurses, and dentists. Health care research was defined to include clinical and other investigations directly affecting patient care. On the basis of survey data obtained from the five major teaching and research institutions, including the VA, MDH concluded that medical education expenditures in Minnesota were $144 million in fiscal year 1992, with $83 million not funded by such specified external and internal sources as federal and state support including Medicare, other public support; a combination of donations, grants and subsides; or other. Of these sources, federal support ($41 million) and state support ($17 million) were most important. MDH concluded, however, that its analysis needed to be re-examined, since the revenue sources are complex, and internal accounting systems are not set up to track them. For example, the range of unfunded education and research expenses (58 percent overall) ranged from 8 percent to 79 percent, with a mean of 28 percent.

2. **University of Minnesota Academic Health Center**

The U of M Academic Health Center (U of M AMC) is headed by a provost who reports to the president of U of M. U of M AMC includes the medical school, the U of M Hospital, and other professional schools, the heads of which report to the provost. As in most AMCs, reporting relationships are complex. The U of M Health System was recently formed to facilitate managed care contracting by consolidating the U of M Hospital and Clinic with the Minnesota Clinical Associates (the faculty practice plan). The U of M Health System reflects the clinical enterprise, and within the U of M structure is determined by a governing board, which consists of two-thirds public members and one-third insiders, including faculty physician members. The Clinical Associates, however, also has a relationship with the department chairs within the medical school. The U of M is a closed practice, with the faculty responsible for all admissions.

a. The U of M Medical School

The medical school center of power rests with the department chairs. U of M is somewhat distinctive in that more than 50 percent of its medical school graduates enter primary care residencies. The school attributes this to at least two factors: the draw of those finishing a two-year program at U of M, Duluth, and coming largely from rural areas; and a rural physician associate program in which 35 to 40 students are given a g-month stipend to practice in a small city. In Minnesota, those representing rural interests are active in the state legislature, and the U of M pattern appears consistent with a public institution operating in this environment.

Clinical revenue from the faculty practice (about $100 million) is a major source of support for the medical school, followed by research grants ($75 million), state funding ($40 million), and some limited endowment income.[4] State funding has not been keeping pace with inflation in recent years, resulting in a total estimated loss of $8 million in constant dollars over the period from 1988 to 1993. These funds are important, as they are the least restricted sources of support for teaching and research.

Resident salaries are paid through the medical school, though much of the financing comes from the U of M hospital as well as other major teaching affiliates and clinical income of the departments of the medical school. Departments with excess funds that exceed clinical needs are able to finance resident support for research. The reliance on clinical income to cover medical school expenses contributes to the stronger position of procedure-oriented specialists in the medical school. Income from the faculty practice plan accrues to department chairs, with a seven percent Dean's tax. These funds are used to augment faculty salaries that are constrained by the university pay scale. An estimate three-quarters is then contributed to research and education. Residency slots are determined at the departmental level as long as they comply with ACGME requirements.

[4] According to the faculty practice plan, there is a $110 gross, which nets $70 million used to supplement salaries and other needs, much of which relate to medical school support.

Clinical income has been declining over the past three years. For example, last year, the internal medicine department had a deficit of about $2 million; pediatrics, $1.5 million; and surgery was also in debt. The medical school has consequently run a deficit, stemming from reductions both in patient revenue and the failure of state funds to match inflation. The deficit was $5 million in 1992-93 and $8 million in 1993-94. It is projected to be $10 million in 1994-95. In response, the Medical School has instituted a hiring freeze (72 percent of $300 million in annual expenses is salary; $51 million accounts for faculty salaries). The school will also be assessing whether there is any flexibility in its endowment fund and discussing possible assistance with U of M Hospital.

b. The U of M Health System

The U of M Health System has 16 residency programs, which include most residencies except for emergency medicine and medical oncology. The largest residencies are internal medicine, pediatrics, family practice, and surgery--each has 100 or more residents.

The U of M hospital has a total budget of $300 million. It receives about $15 million in state appropriation for education; the rest of its obligation is paid by patient revenues.

3. Other Minneapolis-St. Paul Residency Programs

Other hospitals in Minneapolis-St. Paul run their residency programs both independently and through rotations with U of M. Aside from the VA system, the largest programs are HCMC, SPR, and Abbott. HCMC is by far the largest sponsor of residency programs, with 186 residents in seven programs: internal medicine, family practice, surgery, emergency medicine, transitional year, laboratory medicine, and orthopedic surgery. In addition, it has about half as many rotating through, including virtually all U of M's obstetrics residents. Most of the rest are pediatrics. This county-run system has a long history of training, which began immediately in 1887 when HCMC was formed as the Minneapolis General Hospital. The hospital runs its own ambulance system and is a level one trauma facility. Half of the inpatients are admitted through the emergency room. The system is a

major provider of care to the poor and operates its own HMO (Metropolitan Health Care) serving Medicaid and county employees.

SPR sponsors 49 residents in four stand-alone programs: family practice, ob-gyn, pathology, and preventive medicine. Other residents are also invoived with SPR. We were told that, in total, the hospital contributes to the salary of 110 to 120 residents. Until the 1980s, the SPR Medical Center was part of county government when it was created as an independent entity with 300 staffed beds, a 200-person multispecialty group, and a small research foundation. On August 1, 1994, it was officially acquired by HealthPartners. In 1993, the hospital had a budget of $171 million.

Abbott Hospital is part of the HealthSpan system, it has a stand-alone internal medicine residency program with 31 residents. The hospital is a tertiary care provider for the Allina system. In addition to its own internal medicine residents, Abbott regularly has residents from U of M rotating through other areas, including pathology, surgery and neurology.

4. The Mayo Medical Center

Located in Rochester, Minnesota, the Mayo Medical Center includes the Mayo Clinic; Saint Mary's Hospital; Rochester Methodist Hospital, a large national reference laboratory; and Charter House, a 246-bed retirement center. Mayo has regional practices in a multispecialty group practice in Eau Claire, Wisconsin, where it also has an affiliated hospital. It also has community family practice clinics in Decorah, Iowa, and in Kasson, Fairmont, and Wabasha, Minnesota. In addition, there are regional clinics in Jacksonville, Florida, and Scottsdale, Arizona, though they are substantially smaller than the parent center. A hospital in Jacksonville is also part of the system.

The Mayo Medical School has 162 medical students, and approximately 303 students from other schools have six- to eight-week clerkships each year. The Graduate School of Medicine has 956 residents and clinical fellows. About 90 percent of all the residencies are in Rochester, though most of the growth in residencies is in Florida and Arizona. The center emphasizes specialty training, and only 20 percent of the residencies are in obstetrics, pediatrics, internal medicine, or family practice.

The center also has 214 students in its School of Health Related Sciences and 163 trainees in postgraduate or doctoral programs in the Mayo Graduate School. Systemwide, the education functions account for $84 million, $63 million of which is internal and $21 million, extramural.

The Mayo system differs from the traditional AMC in that it is a private tax-exempt corporation with a relatively large endowment, some of which is restricted exclusively to research activities. In some ways, the system appears to be organized and to make decisions in a way that is similar to some traditional prepaid group practices, though the mission and financial incentives of the two kinds of systems are different from each other. Decision making is centralized the Mayo system, and all physicians receive a set salary and have defined clinical responsibilities. Residency programs are paid for primarily out of the medical practice, and decisions about which programs to offer are made centrally. Practice income was previously expected to support a broader array of functions, but it is now only expected to support the hospital and clinical program, the residency program, the allied health training, and working capital and depreciation. Last year for the first time there was an operating loss on the practice. We were told that the $26 million loss was about the same size as the total of the provider tax subsidy Minnesota has introduced to support its health care reform efforts and Medicare's shift to a resource-based physician payment schedule.

Of the system's $1.6 billion in 1993 revenue, 61 percent of it was in the Rochester practice. The center provides about 80 to 90 percent of the care given to individuals in Olmsted County where it is located, but 46 percent of its 1.5 million annual patient visits are from out of state. About half the revenue comes from outside the immediate area.

C. MANAGED CARE CONTRACTING AND PATIENT CARE REVENUE

1. The U of M System

HMOs still play a relatively small role in the patient care revenue stream at the U of M hospital, but the share is growing. In 1992-93, the hospital received 26 percent of its revenue from Medicare, 14 percent from Medicaid (including a university-sponsored HMO, UCare), 19 percent

from HMOs/PPOs, 16 percent from commercial insurers, 12 percent from Blue Cross and Blue Shield, and 13 percent from other sources. Compared with 1988-89, HMO revenue increased from 9 percent to 19 percent, while revenue from commercial insurance declined from 23 percent to 16 percent. Within the faculty practice, managed care of all forms has increased from 4.5 percent to 25 percent. The hospital receives half (51 percent) of its revenue from patients residing in the 10-county metropolitan area. Thirty percent comes from other areas of the state, 13 percent from the four-state region, and 6 percent from elsewhere.

Because its focus is statewide and broader, the system historically paid less attention to developing a managed care base within the Minneapolis-St. Paul market, a pattern it shares with Blue Cross and Blue Shield. The formation of the health system was part of the hospital's effort to enhance its ability to contract with managed care plans and coordinate with the medical group. Patients receive bills from both. The form and nature of contracting varies considerably across managed care plans. Of the three major health plans, one uses the hospital only to a limited extent--mainly for transplants. The second plan has recently opened the system to nearly all of its plan. While this has quadrupled use, patients remain a small share of the plan's enrollment. A third plan has traditionally had a more extensive relationship with the UMHS.

Payment methods vary by plan. Most pay on a per case basis. One plan pays a different rate for each of 35 DRG-like categories, thus adjusting for patient mix. However, we were told that actual rates were brought down in negotiation. Another prefers a standard rate overall but adjusts later if the mix changes. There are separate rates for med-surg, neonatal intensive care, bone marrow transplants, and organ transplants. Within the practice plan, most payments are discounted fee-for-service, though there is movement toward a resource-based fee schedule. There also are national contracts with major insurers for specialty care. These contracts are paid on a global case rate with an outlier. The university is considering capitation for high volumes of service.

2. Other Minneapolis-St. Paul AMCs

Managed care is not currently a major revenue source for HCMC and SPR, the other two major AMCs in Minneapolis-St. Paul other than the VA system. HCMC is a county-sponsored system that depends relatively little on commercial revenue. Forty percent of its revenue is from Medicaid (including Metropolitan Health Plan, the county-sponsored HMO); one-third is from Medicare; 20 percent is from various commercial payers, workers compensation, and HMOs; and the rest is self-pay, often bad debt (8 percent). At SPR in 1993, Medicare contributed 25 percent to the operating revenue of the hospital, Medicaid contributed 25 to 30 percent, and other payers contributed the rest. The hospital now has relatively little HMO exposure, which it sees as a result of the perception that it is a high-cost facility. Managed care contracts are a larger share of the clinic revenue (25 to 30 percent is capitated). With the acquisition of Ramsey Healthcare by HealthPartners, managed care hospitalizations are likely to increase, but contracting details are still being discussed. Since Medicaid is part of the involvement of HCMC and SPR in managed care, we discuss their involvement with managed care later as part of our discussion of Medicare and Medicaid.

3. Mayo Foundation System

The Mayo system does not distinguish between physician and hospital revenue. In total, 40 percent of revenue is from Medicare, about 10 percent is from managed care, 3 to 5 percent is from Medicaid, and the rest is private insurance. Some of the revenue from the last source involves referrals from managed care plans, which pay billed charges but exercise greater-than-usual control over patient service mix and volume. Historically, the center did not discount contracts with managed care plans, since the way they were structured was viewed as cost shifting. There has been some greater willingness to establish risk-sharing contracts. The center views itself as practicing cost-conscious care regardless of the patient's payer source. The Mayo system is increasing its role in the Twin Cities market (e.g., partnering with Health Partners on the BHCAG contract).

4. Medicare and Medicaid Managed Care Contracting

Because of the way in which Medicare sets its capitation rates, the share of the Medicare market in risk-based plans is considerably less than its share in the commercial sector. Currently, there are three risks contractors in the market. Given the hospitalization patterns in Minneapolis-St. Paul, AMCs in the market do not have extensive business with managed care plans for Medicare beneficiaries.

The situation is different for Medicaid. Minnesota Medicaid's HMO capitation rate is viewed as reasonable compared with other states. On the fee-for-service side, Medicaid pays a modified DRG rate, which is lower than Medicare and commercial rates. Because Medicaid uses a hospital-specific base year, educational costs are included. One AMC told us that if one assumes that cost equals 70 percent of gross charges, Medicare pays about 65 to 70 percent, Medicaid pays 64 percent, more lucrative payers (e.g., worker's compensation, self-insured funds, etc.) pay 80 percent, and managed care pays 50 to 75 percent).

With 40 percent of its revenue from Medicaid in Hennepin County, which operates a mandatory Medicaid managed care program, HCMC has the most experience in Medicaid managed care contracting of Minneapolis-St. Paul AMCs. One plan pays DRG rates that, in theory, reflect severity, but the negotiated rates are less than face value. Another offers tight rates on a "take it-or-leave-it" basis. A third has little business with the plan and pays discounted charges. The biggest fear at HCMC is about how the state's shift to a more competitively bid system will affect its patient base through Metropolitan Health Plan and other health plans. The concern is that because the Medicaid population is diverse, competitors may skim off the easier-to-care-for patients, leaving HCMC with the rest. However, HCMC also feels secure because it perceives strong support in the community as a result of its long history of having trained half the local physicians and its continuing involvement with them.

U of M is involved in Medicaid managed care largely through UCare, its university-sponsored HMO, which has an enrollment of 25,416 and is run by the Department of Family Practice program. SPR has a substantial share of Medicaid with its county history. Capitated arrangements have been limited to general assistance but will be increasing as Ramsey County moves to a mandatory managed care system. Historically, the Medicaid contract was through NWLife, but this is likely to change with the acquisition of Ramsey Healthcare by HealthPartners.

D. ANALYSIS OF EFFECTS OF MANAGED CARE AND COMPETITION ON AMCs AND GME IN MINNEAPOLIS-ST. PAUL

1. Effects on the Health System

The growth in managed care or related concurrent trends has affected the Minneapolis-St. Paul market and the Twin Cities in particular. According to the Council of Hospital Corporations, discharges and lengths of stay declined in the Twin Cities in 1991 and 1992, and the latter also dropped in 1990 in the Twin Cities. This resulted in .a drop in days in all three years, which was greatest in 1992 when days declined by 6.4 percent overall and 4.9 percent for metropolitan area residents. This accounted for 78 percent of discharges in that year.[5] Within the metropolitan area, total hospital days declined from 672 per 1,000 in 1986 to 535 in 1992. In 1992, inpatient days per 1,000 were 370.6 for those ages 0 to 14, 410.1 for those ages 15 to 64, and 1,764 for those ages 65 and older. In 1991, hospitals were at 66 percent of their operating beds and '48 percent of their licensed beds. Existing coding makes it difficult to accurately measure managed care penetration, but it appears that growth has been slower the past few years than over the last half of the 1980s. After reviewing the evidence, OTA (1994) concluded that the evidence of managed care's effect on expenditures and changes in expenditures in Minneapolis-St. Paul was both contradictory and limited. Nevertheless, reduced hospital capacity and system consolidation appeared to be the largest effect.

'These data are not made available on a hospital-specific basis except to participating hospitals. However, this may change as a result of data initiatives associated with health reform.

We did not perceive that managed care has thus far strongly affected AMCs, in particular, in Minneapolis-St. Paul, though there is considerable concern that it may do so in a potentially negative way in the future. The current situation may exist because managed care has a longer history in Minneapolis-St. Paul, and hence, AMCs have had time to develop market strategies for co-existing. However, with price competition heating up, and state reform and purchaser initiatives likely to expand managed care penetration throughout the AMC service area, AMC concern is growing.

The managed care plans we interviewed perceived that the market would not support paying AMCs more for services available elsewhere, particularly if greater severity or better quality was not demonstrated.. However, long-established patterns and competitors appeared to be as large a threat to AMCs as their price competitiveness is. One well-established health plan noted that its hospital relationships extended back to when it was formed, and few hospitals would give privileges to the health plan doctors. The consolidation between the two major health plans and hospitals to enhance control over the availability of hospital beds also detracts from the ability of AMCs not so affiliated to compete for managed care patients. The prestige and perceived customer orientation of the Mayo system appear to be making it a greater threat to the University Minneapolis-St. Paul referral base as well, particularly as the system is perceived to have the resources to enhance its ability to implement competitive strategies.

The greatest current challenge to U of M is retaining a patient care base and being competitive. Since 198990, patient days have declined from 147,000 to 127,000, reflecting declines both in lengths of stay and admissions. Outpatient encounters have been increasing, however, especially the past few years. We were told that one issue for the U of M is that it has little local primary care base and bridges; admissions from rural Minnesota and specialty referral care from out of state are substantial. We were also told that the U of M has historically been viewed as arrogant by the community (many of which obviously also are competitors), having a history of departmental fiefdoms and poor management, and paying little attention to managed care until about two to three

years ago. There was not much outreach to the community, and the community providers perceived that once a patient was referred, he or she was lost. The U of M is at a disadvantage in developing a managed care strategy because managed care has come fate to the university, and the system has been forced to develop around it, thus foreclosing options. The ability of the U of M to develop a managed care strategy has also been hampered by highly publicized recent scandals involving research and other areas within the medical complex. These events did not involve the hospital administration directly, but they still contributed to staff turnover, and created a considerable distraction, and the need for time to retool. The U of M is also impeded by location, which is less than ideal from a marketing perspective, and by the attitudes of some key managed care leaders who see the university as high cost and hard to work for. More positively speaking, we heard support from several managed care plans for helping the U of M to adapt.

The U of M health system has recently strengthened its financial position, though the medical school's financial profile has been worsening. This situation is the result of a deliberate strategy by new leadership in a revamped structure to enter the managed care market aggressively. The U of M cut $45 million in expenditures and has moved down from 20 percent above market in charges to considerably less. The cost reduction involved a reduction in 600 employees, a decrease in employee benefits, restructuring or debt, change in malpractice, and change in physician patterns. Since 1990-91, the days in accounts receivable declined from 94.9 to 64.8. We were told by interviewers at the U of M that in 1994, the community rate increase for U of M was 3.0 percent compared with increases in the 8 to 11 percent range for other Minneapolis-St. Paul hospitals, and that the U of M cumulative increase of 21.4 in rates over the 1990s is half or more of most other hospitals. There have not been service changes, but the U of M recently agreed to exchange referrals of obstetrics (where it had little business) for neonatal care with Riverside Hospital.

U of M perceives that with state and Medicare support for GME, it can be competitive. Its goals are to be a valued health care provider to all plans, to create an integrated delivery system with

a major partner (potentially Blue Cross and Blue Shield), to solidify its relationship with rural Minnesota, and to continue to be nationally competitive in its tertiary referral market. However, it is possible that a strategy geared toward affiliation might conflict with one designed to achieve autonomy, i.e., of being regarded as a resource by all managed care plans in a market where vertically integrated organizations are increasingly common. Practically speaking, however, there remains considerable overlap in contractual arrangements across systems of care for different kinds of purchasers.

2. Effects on GME

Perhaps because primary care is emphasized more in Minneapolis-St. Paul training than in some other locations, there does not yet appear to be considerable discussion about changing the balance in primary care. However, the issue of how training is best provided is being seriously considered as the state explores possibilities for financing this system. The other major issue related to the effects of managed care and competition is federal versus state responsibilities.

The basic concern related to training appears to be determining what is involved in ambulatory-based training and how to provide it. There appears to be support among key managed care plans for using their sites to facilitate training, particularly of primary care physicians. Apparently there is a perception that the number of ambulatory training sites needed can be absorbed by the system, and that patients will accept teaching if it is well orchestrated and presented. Recruitment did not appear to be a major impetus for plan interest in GME so much as the broader discussions with state policymakers in Minnesota about how to support and finance this function in a competitive market. There was also interest among managed care plans in making the training fit the current environment and its focus on ambulatory care. One executive described this as a need for a "philosophical redesign of the faculty at the U of M" so that they are more of a community resource in training caregivers. Another characterized the role of managed care plans as "teaching the teachers." On the other hand, we heard concerns from thoughtful medical school educators about

the oversight of managed care plans as it relates to the teaching process and the difficulty of training in an ambulatory care site where quality control is more difficult and effective training can dramatically reduce the number of patients seen. There appear to be differences of opinion regarding the value of an "apprenticeship" type of training, which some viewed as key and others as a return to the pre-Flexnerian era. On the other hand, it was not clear from those we interviewed how broad the differences of opinion are, since many in the managed care industry perceive value in U of M participation in facilitating ambulatory-based teaching so long as it occurs in the appropriate locations.

The issue of federal versus state responsibilities was raised most prominently in our discussions with the Mayo Health Center. The concern is that state-based quotas on resident training positions or policies on patient mobility are insensitive to the role of AMCs as a cross-state resource serving broad regions or national objectives.

E. CONCLUSIONS AND LESSONS

The Minnesota experience highlights the ways in which some AMCs may be marginal players in even well-developed managed care markets. It also underscores the potential challenges involved in altering this situation in a market that is rapidly consolidating and therefore foreclosing options. On the other hand, the experience illustrates the diversity among AMCs and their positions. Minnesota also provides a useful example of how the public and private sectors are trying to work together to identify how to address the issue of funding for GME and similar objectives in a competitive system as well as the difficulties involved in doing so. Like that in San Diego, the Minnzsota experience shows the connection between policies affecting AMCs and those focusing on GME.

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APPENDIX B.3

WASHINGTON, DC

CASE STUDY

FINANCING OF.ACADEMIC MEDICAL CENTERS AND GRADUATE MEDICAL EDUCATION UNDER COMPETITIVE SYSTEMS WITH MANAGED CARE:

THE WASHINGTON, DC METROPOLITAN AREA MARKET

November 1994

by

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This case study was developed under Contract No. 282-92-0044, Delivery Order #6, with the Office of the Assistant Secretary for Health. Any opinions or perspectives are solely those of the author.

WASHINGTON, DC

The purpose of this case study is to describe the structure of graduate medical education (GME) in the Washington, DC, metropolitan market (referred to here as "Washington"), how it and its associated academic medical centers (AMCs) are financed, and how financing has been affected by the growth of competitive systems and managed care. The case study is based largely on both information obtained through interviews with market participants in August 1994 and documents.' Having three political jurisdictions, Washington is a complex metropolitan area with multiple subsystems of care. This case study primarily addresses the market dynamics of George Washington University Medical Center and Georgetown University Medical Center, focusing more on the relationship of these facilities to Virginia providers (e.g., the ANOVA Health System) than to those elsewhere in the metropolitan area.

A. THE WASHINGTON MARKET

The Washington area contained 4.4 million in 1992, ranking among the top 10 metropolitan areas in population nationwide. The area is unique in that it includes three political jurisdictions: the District of Columbia, Maryland, and Virginia. While these jurisdictions are by no means homogeneous, each has a distinct profile and regulatory climate. This means that health plans and providers in this metropolitan area are affected by the District and the dominant presence of the federal government, by Maryland, which has the distinction of being the only remaining state with an all-payer hospital rate-setting system, and by Virginia, which has a relatively noninterventionist philosophy of government.

'Written sources are summarized in the reference list. We do notspecifically cite sources for all data as some were often included in materials provided by those we interviewed and the original sources are often not clear.

Of the 4.4 million people in the Washington, DC metropolitan statistical area (MSA), 13 percent live in the District, 43 percent in Maryland, and 42 percent in Virginia (2 percent are in West Virginia). The District and surrounding counties are some of the most densely populated in the country. The area is both well-educated and relatively wealthy: certain counties and the District rank in the top 25 counties nationwide in percentage of adults with a bachelor's degree or higher and in median family income. With a 1987 per capita income of $17,820, the DC metropolitan area was ranked first among metropolitan areas nationwide. The District itself has a relatively large black population--66 percent in 1990, compared with 27.1 percent for the larger metropolitan area; 5.4 percent of the population is of Hispanic origin, compared with 3.4 percent in the larger metropolitan area.

The employer profile in Washington is heavily influenced by government. The federal government is the dominant employer. While there are other reasonably large government entities (e.g., the District and the University of Maryland) and some large firms, most area firms tend to be relatively small, particularly those in jurisdictions other than Virginia and inside the Beltway. Thus, the market is dominated largely by white collar businesses, many functions of which derive from the presence of the federal government.

Washington has an active and increasingly competitive managed care market, although it is considerably less developed than some other markets, particularly those on the West Coast and in Minneapolis. In 1993, 14 percent of the population was in HMOs. Preferred provider plans (PPOs) are a relatively recent option under the federal government's Federal Employees Health Benefits Program, and they are not very well established in Washington. Managed care is thus far relatively undeveloped within the public programs in the market. This is likely to change in Medicaid as both the District, Maryland, and possibly also Virginia implement managed care initiatives. Medicare risk contracts are not very extensive in Washington, and the ability to integrate them with the Federal Employees Health Benefits Program has been limited. In 1993, Medicare and

managed care arrangements were the most common payers per discharge from District hospitals, at 23 and 21 percent, respectively. Medicaid followed at 18 percent, and traditional commercial insurance at 13 percent. This represents a shift away from traditional commercial insurance, which paid for 22 percent of discharges in 1989, and an increase in managed care arrangements,which paid for only 8 percent of discharges in 1989. Smaller increases were also seen in Medicare and Medicaid during this time period (DC Hospital Association 1994).

It is difficult to measure penetration for the Washington metropolitan area as a whole given its interstate composition. We were told that managed care penetration is 20 percent of the population in the District, 26 percent in the Maryland metropolitan area, and 9 percent in Virginia, though we could only find published statistics for the District, which indicated a lower penetration rate there (14 percent) (InterStudy 1994). As a whole and including Baltimore, GHAA shows (1994) that HMO penetration was 26 percent in the consolidated Baltimore-District MSA in 1991. The market is viewed as underpenetrated by and attractive for managed care, prompting the recent entry into the area of a number of national firms. Humana acquired Group Health Association, and U.S. Healthcare has entered the market, though it does not have a large base. There is reported to be considerable venture capital in the area. This activity has spurred competition from existing plans, leading market participants to perceive that the managed care market will be highly competitive over the next several years until it stabilizes. Premium rates are said to have been flat or slightly declining over the past two years. In addition, some in the hospital community expect at least one major consolidation of hospitals to occur over the next year. More hospital-physician integration is also expected. Thus, it is expected that extensive competition will lead some hospitals to consolidate over the next few years.

Washington AMCs are well respected, but they are not viewed as uniquely prestigious compared with some AMCs nationally. Thus, the local AMC services are not necessarily viewed as distinctive,

compared with the top tertiary hospitals in the Washington market or as helping HMOs in the market as much as the most nationally prestigious AMCs.

The Washington area has one of the highest physician-to-population ratios in the nation. This reflects, in part, the role of the federal government and the proximate location of the National Institutes of Health (NIH) and other clinical facilities. These facilities also strongly influence the health care environment in Washington. Another market influence is the geography of the Potomac River and the jurisdictions. We were told that except for tertiary services, most residents seek care in their own jurisdictions, rarely moving into the District from Virginia and Maryland. Because of these patterns, there are big differences in payer mix across jurisdictions. Both AMCs we studied are located in the District.

B. GRADUATE MEDICAL EDUCATION STRUCTURE AND FINANCING

1. The Medical Education Environment in Washington

There are three medical schools in Washington: the George Washington University Medical School, which has 640 students; the Georgetown University Medical School, which has 779 students; and the Howard University Medical School, which has 439 students.[2] In contrast to the other two metropolitan areas we studied, all three medical schools in the District are private. In addition, unlike many states, the District gives no support to private medical schools. Howard University has a unique national role in higher education and training minority physicians, and it receives more federal support than most AMCs.

In addition to the hospitals operated by each school, extensive training occurs in other facilities, such as the Washington Hospital Center, the Fairfax Hospital, Children's Hospital, and DC General. In 1993-94, there are 1,279 residents in total at George Washington, Georgetown, and Howard

[2]Washington is part of a consolidated MSA with Baltimore. There are two medical schools in Baltimore:. Johns Hopkins University and the University of Maryland. These have some influence on the Washington market but are not a focus in this case study.

universities. Georgetown has the largest number (521), and George Washington and Howard have virtually the same (378 and 380, respectively).

2. George **Washington University Medical Center**

George Washington University Medical Center was founded in 1825. The medical center consists of the School of Medicine and Health Sciences; the University Hospital; the Medical Faculty Associates (the faculty practice plan); and the University Health Plan, a university sponsored HMO. The vice president for the medical center reports to the head of the university. He has held this position for just over a year but in that time has reconfigured the university, thus establishing a more traditional AMC structure. A new chief executive officer position has been established for the hospital. The lines of authority have been simplified and clarified, with four major functions reporting to the vice president. The following new key staff have been hired: chief financial officer, chief legal officer, and strategic planner/head of managed care, who was soon to start at the time of our visit.

a. The George Washington University School of Medicine and Health Sciences

The medical school has an annual class of about 150 students. It receives more than 60 percent of its funding from clinical revenue. The endowment is not large in relation to some schools, and there is no state support, The school does not focus heavily on research, being outside the top 60 schools that receive support from NIH, which has declined from 43 percent to 21 percent or less. The medical school has the highest tuition in the country and has recently committed to not raising it further. Georgetown University, which shared the "distinction" of having the highest tuition, froze it in 1986.

The medical school prides itself on having a student body that is more diverse than most, with a history of more women, older students, and minorities. We were told that this year's class, which includes 25 minority students, is half female. The school also views itself as innovative. A split in

the internal medicine faculty 25 years ago (over the issue of a family practice residency) led to the creation of residencies in general internal medicine and in general pediatrics in the Department of Health Care Sciences. This department also provided the impetus for the still-existing university-based health plan (George Washington University Health Plan) set up in 1972 specifically to provide an ambulatory base for research and education. A family practice program was initiated in 1990, and the department is heavily invested in an interdisciplinary team approach to the delivery of care.

Despite this diversity and its innovations, the school remains specialty dominated. There are 378 residents, only 62 of whom are in internal medicine (with 15 in the medical primary care-focused subtrack of health care sciences), and 12 of whom are in pediatrics (in affiliation with Children's Hospital). Sixty percent of the internal medicine residents go on to specialize. There are 39 residency programs overall, 37 of which are ACGME-accredited. The number of residents has been relatively stable, although the internal medicine program was not filled in this year's match. We were told that this was true for many similar programs, and that it reflects the resistance of students in demanding programs to working in cramped facilities when there are alternatives that offer better conditions.

The number of faculty has dropped as revenue has become tighter. Faculty revenue is heavily driven by clinical activity, with bonus plans and newer faculty at risk under formula for their salary. There has been a shift toward a more central faculty organization.

The medical school recently added the position of an assistant dean, who will have specific responsibility for GME. The purpose of this change is to bring GME closer to the school so that residents are more than apprentices and mere appendages of the hospital.

b. The University Hospital

The University Hospital is a 501-bed tertiary care facility but operates only 350 beds; approximately 300 are occupied. As part of a restructuring effort, the facility will be downsizing to 250 beds. This reflects current operating volume, with less emphasis on inpatient psychiatric services

and obstetrics and more on ambulatory treatment of these services in general. Despite the hospital's tertiary focus, we were told that, like other tertiary care facilities, only about 20 percent of the care is tertiary. The hospital has four centers known for their excellence: cardiology/cardiac disease, neurosciences, oncology, and emergency medicine. The hospital rates as one of the top five in training generalists. It is also the primary care provider for a section of Northwest and downtown Washington. It serves a broader area if the GWU health plan service area and community sites are considered. Residency positions are funded through the hospital, with some funds coming from affiliates and some from clinical revenue generated by the faculty. The affiliated hospitals contribute to salary, but the amount is viewed as less than the full share of costs. Residents rotate through some other area hospitals.

c. The Medical Faculty Associates

The Medical Faculty Associates, formed in 1969, was recently reorganized to evolve into a multi-specialty practice organization to more effectively negotiate with the hospital and lessen the influence of the previously very powerful and independent clinical department chairs. Our interviews did not address the issue of revenue and its sources.

d. The George Washington University Health Plan

The George Washington University Health Plan is 501 C(4) incorporated, and it is wholly owned and controlled by the university. It is in transition from a group model with a single site staffed by full-time medical faculty to a network based on an IPA with physicians throughout the Washington area. We were told that physicians are carefully selected, with many trained at the university. Of its 72,000 enrollees, about 30,000 are served by the central downtown site, and another 17,000 by the other group sites. The remainder are in the IPA.

Training occurs in most sites, and trainees include medical students; nurse practitioners; administrative residents; and residents in general medicine, general pediatrics, and similar programs.

The Family Practice Program will be based at the Rockville ambulatory site. Training is seen as a contributor to the high cost of the plan relative to the market. It requires about 20 to 25 percent more space and 20 to 25 percent more personnel, since students occupy rooms more and reduce the productivity of physicians by 25 to 33 percent, as shown in an analysis of the plan. The plan is aiming for higher performance and has made improvements, but perceives it unlikely that productivity can match that in nonteaching settings. However, the expense of training is viewed as proportional to experience, with medical students (especially juniors and seniors) being the most expensive. For residents, the plan views itself as losing money the first year, breaking even the second, and generating a surplus in the third.

3. The Georgetown University Medical Center

The Georgetown University Medical Center is a division of the university, and the head of the medical center is the executive vice president. The center makes up two-thirds of the university revenue and staff, though it occupies only about one-third of the land. We were told that the center is a "cash cow," though support to the university will be at risk as clinical revenue tightens. Of the total $485 billion budget, about half is from the hospital, 23 percent is from the practice plan, and 18 percent is from medical research, which has tripled over the past six years. The role of tuition funding lessened after the university froze tuition, but this is seen as being offset by the greater ability to attract research funds and students. Endowment income is negligible. Education and general activities are subsidized by a 5 percent tax on clinical revenue.

The role of the dean of the medical school is limited to managing educational programs, since all clinical chairs report to the executive vice president, who is also the executive dean. There is a relatively new and small senior administrative team that works closely together and views good management and changing faculty perceptions as key to good performance. For example, previous "rules," or attitudes, they are attempting to change include (1) revenues are mine, expenses are yours;

(2) surplus is mine, deficit is yours; and (3) never make the same deal twice. As in other AMCs, there is the classic tension between the clinical chairs and the administrative staff.

The medical school at Georgetown was formed by community physicians. There is still an open faculty, and community physicians are involved in teaching as well as patient care. As in other AMCs, there is tension between community physicians and full-time faculty. Half of Georgetown's residents are at Georgetown and half at affiliated hospitals. The most significant programs are with the following hospitals: Arlington, Fairfax, D.C. General, and the Veterans' Administration (VA), though this could change in the future. The VA, for example, recently cut back its support for affiliated residencies, and Georgetown and Fairfax have become increasingly competitive for tertiary services. Fairfax, which historically has trained many Georgetown physicians, has developed into more of a tertiary facility (e.g., trauma surgeons). Tensions related to money (how much Fairfax will pay for residents) are high.

The Georgetown faculty group practice plan is headed by a board comprising the 17 clinical chairs and several at-large members. It has an elected head, who is a clinical chair, and ex officio administrators. An executive committee is influential in decisions. The group was formed within the past few years to facilitate joint contracting for managed care and does not yet function like a true group practice, with faculty still somewhat insulated from market forces. Each department runs its own clinical operation and has a dean's tax and central plan tax. The practice plan accounts for $100 of the $400 million revenue base for the medical center, and it exerts a disproportionate influence, we were told, because it is the major area for potential growth. Traditional commercial coverage is viewed as a still significant source of revenue (e.g., 20 percent), though this varies by department. For the first time last year, the faculty practice did not break even. This is attributed to managed care, not Medicare's resource-based relative value scale. The faculty practice group has developed a model for sharing capitation revenue.

3. ANOVA Health System and Fairfax Hospital

The ANOVA Health System is an example of the types of large hospitals in competition with AMCs in the community. It has extensive tertiary services and affiliations with major residency programs. It is an $800 million organization with 7,000 employees. ANOVA includes the Fairfax Hospital, which is a tertiary referral hospital, two other hospitals in Virginia (Fair Oaks and Mt Vernon), a few nursing homes, and five urgent care centers. It also provides other services, some involving joint ventures with other organizations. Its market is the Northern Virginia area. Its strategy has been to position itself to take advantage of the growth of managed care in Virginia, and it appears to have done so reasonably successfully.

Its main affiliations are with Georgetown University (11 programs including plastic and general surgery, internal medicine, ophthalmology, andorthopaedics), George Washington University (ob/gyn and urology), and MCV (family practice). All but the family practice program are inpatient-based, and it is estimated that 30 percent of the residencies are in primary care, but that includes some internal medicine residents who will specialize. The hospital pays a stipulated fee per resident, and there has recently been some dispute over the level of payment.

Fairfax Hospital has 656 staffed beds with about an 80 percent occupancy. It estimates that 30 percent of its care is tertiary. The hospital is a center for excellence in cardiac surgery, handling over 1,200 cases a year. It has an active heart, kidney and lung transplant program; an active obstetrics program with 9,000 deliveries a year, including a level 3 neonatal intensive care unit; a level 1 trauma service with a helicopter; an active emergency room that handles 60,000 visits per year; and cancer radiotherapy. It has 101 residents.

C. MANAGED CARE CONTRACTING AND PATIENT CARE REVENUE

1. The George Washington University Medical Center

Managed care represents about 20 percent of hospital revenue, with half from the university's health plan and half from others. About five plans are most important; there is less business from

large national companies with primarily national accounts. The university has a significant Medicare population of about 25 percent, which it views as helping to support GME, and Medicaid is about 7 to 8 percent. A robust commercial base, including from Blue Cross Blue Shield and its affiliated HMO, accounts for about 15 percent of revenue overall but a larger percentage of the profit. The commercial base has been eroding, and managed care has been increasing. Medicare and Medicaid have been flat. Eight to ten million is what they attribute to uncompensated care. We did not obtain information to allow us to express this as a share of revenue.

The health plan contracts with the Medical Faculty Associates through a separate set of capitation pools for primary care and specialty care. It contracts with the hospital on a per diem basis. The plan also contracts with 22 community hospitals whose form of payment varies greatly by jurisdiction. Maryland hospitals are paid using rate-setting commission rates. Virginia hospitals are paid using diverse forms of discount, per diem, and other arrangements. The University Hospital is used for patients based in the District and as a backup for other hospitals. The health plan has negotiated what it perceives as competitive rates from the University Hospital. While physician costs are viewed as high, the use of capitation transfers risk to the physicians. The health plan accounts for about 31 percent of faculty revenue.

Other hospital managed care contracts were said to be generally based on per diems or discounted fee-for-service arrangements. We were told that both are common in the metropolitan area, where capitated contracts are rare. HMO rates are viewed as higher than those of Medicare or Medicaid, though all are being pushed down. Contracts tend to cover both primary care and specialty care, though the managed care plans exercise some discretion in their referrals. We were told that the George Washington system is viewed as being costly in a high-cost city. This is partly attributed to a high bad debt load caused by patients entering through the emergency room.

2. The Georgetown Medical Center

Medicare provides about one-third of the medical center's clinical revenue. Managed care is now about one-third of the revenue, up from 5 percent 5 years ago, Medicaid is 6 to 7 percent, and the rest is a variety of commercial arrangements. The hospital has about 6 percent uncompensated care. Management believes that the key distinction is not between managed care and traditional delivery but between retail and wholesale contracting for service. Medicare is viewed as having initiated a trend that will ultimately have all payments on the basis of prices, involving deep discounts from charges in whatever form.

Georgetown has managed care contracts with a variety of HMOs, but tends to get most of its volume from three plans. The contracts are not restricted to tertiary services. Pediatrics, in particular, has a variety of services. The form of managed care contracts varies. There is not much global capitation. Georgetown has one capitation contract for primary care for Medicare at-risk members and a global capitation for neurosurgery. Hospital contracts tend to be on a per diem basis, though change is viewed as likely. Different health plans have different preferences for contracting. One is establishing competing contracts for packages of diagnostic groups. Others want strong relationships with a few institutions. In physician contracting, two different models appear to be evolving: those favoring capitation of specialists and those who prefer to pay competitive rates (e.g., 110 to 115 percent of Medicare) and retain the excess. The market for routine inpatient services (i.e., "bread and butter") is viewed as highly competitive and localized within jurisdictions. That is, those in Virginia or Maryland are less likely to come into the District or to cross the Potomac River to the other jurisdiction. The AMC is viewed as having one advantage in that it is easier to develop joint hospital-physician capitation rates than in other settings. Newly entering plans are strong negotiators.

3. The ANOVA Health System

At Fairfax Hospital, commercial insurance accounts for about 60 percent of revenue. Managed care is 32 percent of the hospital revenue, about evenly split between HMOs and PPOs. Three years

ago, HMOs accounted for only 20 percent of the managed care revenue, and it was more heavily composed of PPO payments. The hospital expects this trend toward greater managed care revenue (expressly from HMOs) to continue in the future. Historically, managed care has paid the hospital on a discounted fee-for-service basis, but this is shifting to per diems. The hospital, in conjunction with its physicians, is interested in increasing the extent of full-risk contracts with managed care plans.

4. Medicare and Medicaid Managed Care Contracting

Managed care within the Medicare and Medicaid program is limited in the Washington area, though this may be changing. Managed care initiatives are being developed in the District and Maryland, and being considered in Virginia. Two plans (George Washington and Prudential) have recently begun to offer Medicare risk contracts, joining HealthPlus, which was previously the only area risk contract. We were told that others are developing these products. Since this activity is new or emerging, there is little information on how these arrangements will affect AMCs.

D. ANALYSIS OF EFFECTS OF MANAGED CARE AND COMPETITION ONAMCS AND GME IN WASHINGTON

1. Effects on the Health System

Managed care has affected the health system in Washington, though the greatest concern is anticipatory, that is, about what *will* happen. AMCs are positioning themselves to respond in a highly competitive market that is likely to become more consolidated and to have a considerably larger managed care penetration in the future. AMCs in the District are both hurt and helped by their location. They may be adversely affected in terms of attracting Virginia and Maryland residents who seek services other than tertiary care. On the other hand, it is to their advantage to be located proximate to Maryland, which has all-payer rate setting. Though hospital rates in the District are not lower, in general, than those in Maryland, District hospitals have much greater ability to negotiate rates with managed care plans and thus, in some cases, they may be able to offer lower

rates than Maryland hospitals by discounting. Some of this advantage for AMCs is said to be eroding as drops in length of stay lead other hospitals to establish rates 'below cost." Specialty incomes also are said to have declined. It is not clear whether the incomes of primary care physicians have increased. Some say the excess of physicians in the markets has limited primary care fee increases, but others say that salaries are increasing for these physicians. Perhaps salaries but not fee-for service income have been increasing, which would be consistent with the more national labor pool used to recruit full-time salaried physicians in managed care plans.

Georgetown has maintained steady margins of one to two percent. It attributes this in part to a strong cost accounting system, which the AMC believes would serve it well under risk arrangements. There is concern that GME generates additional costs. One administrator characterized this as "an old song which happens to be true." Adjustments for case mix are perceived to be inadequate, leaving AMCs at a competitive disadvantage because they serve a sicker population that is more expensive to care for. The disadvantage is viewed as greatest for "bread and butter" services, such as hernias. Georgetown recently reduced expenses by $20 million, though there has as yet been no reduction in services. There are concerns that eliminating of unprofitable services could conflict with the broad-based needs of training. There also are concerns that economies have been achieved at the cost of replacement investments. Thus, the effect of these reductions on care may not be apparent in the short term. There is concern among the AMCs that no one pays for quality. On the other hand, some managed care plans question the need for certain acquisitions (e.g., gamma knives).

At George Washington University, occupancy is down, resulting in unused capacity. Although admissions in the District overall decreased by 1.97 percent from 1992 to 1993, Georgetown's declined by 0.99 percent, Howard's by 3.08 percent, and George Washington's by 4.61 percent. Meanwhile, admissions at DC General increased (4.06 percent), and those at the Washington

Hospital Center remained stable (a 0.28 percent decrease). The planned downsizing of the *George* Washington inpatient facility is a response to the changes in the market.

We were told that the market generally does not allow a premium for AMCs, with competition being especially tough for "bread and butter" services. If a premium is paid, it is typically said to be market driven depending on what alternative services exist. This is illustrated by the two plans we interviewed. Since one plan's main concern is to develop an effective system with the right capacity, it might pay more for one service if this allows it to bundle a number of services together, which is more convenient for the plan's patients and staff. There is a preference for per diems, but arrangements are negotiated. General services and specialty services are contracted in this way, the emphasis in the latter being specialized technical services and high volume providers. The plan contracts with an AMC, but the emphasis is on specialty services. Both this plan and a second plan we interviewed make it a priority tool selecting hospitals where their staff would be able to practice and follow through on the care of the patient. It is the strategy of this second plan to establish a relationship with an AMC in each market based on the concept of centers of excellence. The plan perceives that the rates generate some net contribution to GME, though these costs are not fully funded.

George Washington and Georgetown are both private institutions, but their structure is different. These differences are viewed as creating both strategic advantages and disadvantage vis-a-vis the managed care market. George Washington has a managed care base and feeder network, and it is more experienced with managed care and primary care in general. Georgetown has less experience but more flexibility in developing a strategy without being affected by an existing HMO it sponsors. For at least two plans, its open panel and more broad-based set of services offered were attractive.

In response to competition, George Washington is creating a network and set of strategic alliances. While the medical staff did not historically compete with alumni in the community, this

has been changing since 1985. To generate a patient base, satellite centers have been created (e.g., a major cancer center in Shady Grove and a multi-specialty center in Ballston) along with a physician network with primary care contracts. The George Washington health plan indicates growth of 15 to 16 percent in 1993.

Georgetown is developing a point-of-service plan with its faculty. It currently serves 8,000 employees and may expand. Those using the faculty network, which has 400 physicians, have the best incentives, while those using the community network also have advantages. The strategy for the plan is still under development, and one issue still outstanding is that the physician staff are perceived as not really understanding risk, the marketplace, or managed care.

Both George Washington and Georgetown serve only a share of the District, with a service area centered in Northwest DC. Though both universities, and George Washington in particular, have larger shares of indigent individuals with concurrent health problems than some other District hospitals and many hospitals outside the District, they are not the exclusive providers to the poor, many of whom are served in Greater Southeast, DC General, and Howard University hospitals. The effects of managed care on these institutions are likely to be different in some ways from those we examine here, being shaped as much or more by the role of these facilities as community providers as by, in the case of Howard, its teaching mission.

2. Effects on GME

The effects on GME of the growth of managed care are still evolving. At Georgetown, clinical services are said to subsidize teaching--at $25 million per year. There also is a belief that research is a necessary laboratory to stimulate students and teachers. The focus is specialty training. There have been some cutbacks in anesthesiology and ophthalmology, though the number of residents has not necessarily changed because some programs have lengthened. The issue of increasing residency slots in general internal medicine is being considered. For example, community-based preceptors are needed at Georgetown, since the current general internal medicine faculty of 13 have 60 or more

students and residents, and only a dozen exam rooms. However, there is a concern for how to finance the costs of physicians trained in the community. In Washington, as in other communities we studied, people perceive that it is harder to teach in community-based settings than at the hospital. At George Washington, the AMCs are helped by their HMO in their training objective. George Washington is involved in ongoing discussions with its HMO about how to deal with the costs of teaching. Because of the university's mission and history, providing some support is acceptable to the HMO. One model of focus is the Harvard Community Health Plan, under which the HMO gives one percent of its premium for medical education but pays the hospital at commercial rates. While the effects of this arrangement were said to be unclear, it is likely that it would mean less funding initially for GME but more if the HMO grows. Fairfax has formed a GME task force to assess what the role of the system should be in GME. One issue being considered is what to do if there is no longer a need for certain specialties within the system or community and whether the system should then shift the focus to primary care training.

The HMO involvement in physician training appears to be relatively limited in Washington, as elsewhere, where it tends to react to individual physician interests and to be very decentralized. We were told that interest was relatively low or restricted to situations in which it does not increase costs. One HMO that is considering a more active role in training notes that it would need to be funded separately or as part of a community role but not paid for as part of the insurance function of the plan. The HMO is willing to contribute to such training but perceives that the costs need to be broadly spread across the population. There is both agreement that residents currently practice inefficiently and concern that this perhaps needs to change so that physicians are trained to practice in the cost-effective manner that will be expected of them in the future. Finally, one interviewee suggested that it is not really possible to train primary care physicians and specialists in the same place, given their different orientations.

E. CONCLUSIONS AND LESSONS

Washington is the largest of the metropolitan areas we studied in our cases, and its system of care is the most complex. While we focused on two of the three major AMCs in the Washington area, the study could not capture the full complexity of care patterns and effects across the entire metropolitan area.

In contrast to the public AMCs in San Diego and Minneapolis-St. Paul, the Washington AMCs are private, and they do not obtain state support. This makes patient care revenues, complemented by research funds, more important to the support of GME. George Washington is particularly dependent on this source, as it has less research funding. It is also located closer to the inner city, a fact reflected in its patient and service base. However, neither system is the main provider to the poor in DC. Both also have the advantage of a unique location: being proximate to Maryland gives the District hospitals greater flexibility in negotiating rates.

Washington is a less mature managed care market than the other two we studied, but it is rapidly evolving and highly competitive. Thus, we see many of the same dynamics in Washington as elsewhere. In particular, managed care plans generally do not perceive that the market will support much, if any, premium for GME. At least in Washington, this makes competition especially acute for more routine services and wherever there is more than one specialized provider. Fortunately for the AMCs, there is some preference for stable hospital arrangements, and many arrangements were set before the market became so competitive. However, change is still possible. For example, Kaiser at one point shifted its hospital contract from one Virginia system to another, and Humana, which purchased GHA, may change the historical arrangement GHA had with George Washington, among other hospitals in its provider network. Because George Washington and Georgetown are alike yet different from one another, their experiences in strategically responding to the current environment should provide useful insight into how AMCs are affected by managed care and what determines these effects.

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APPENDIX C

HMO PENETRATION AND ACADEMIC HEALTH CENTER HOSPITALS MISSIONS, 1984-1991/92

DRAFT - NOT FOR QUOTATION

HMO Penetration and Academic Health Center Hospitals' Missions, 1984-1991/92

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(Report No. 600-2)

Presented at the Annual Meeting of the
Association of Academic Health Centers

October 1, 1994

Financial support for this research was provided by grant no. 94-56 from the Commonwealth Fund.

INTRODUCTION

Academic health centers operate the nation's premier hospitals. They are in the vanguard of providing the most sophisticated and technologically advanced care that medicine has to offer. They have a major responsibility for the training of tomorrow's physicians. In many communities they are also the hospitals of last resort for many poor and/or uninsured people, especially those suffering from major traumas or requiring special care not provided by other hospitals.

All of these strengths come at a price, however. Academic health centers' hospitals are also among the most expensive providers of health care. Their high costs place them at a potential competitive disadvantage as more and more of the American population choose to enroll in health maintenance organizations or other types of insurance that manage care. The hallmark of many successful HMOs is their ability to both steer their subscribers from high to low cost hospitals and extract substantial discounts from hospitals. Thus, many academic health center hospitals view the continuing transformation of the health care system as a potential threat to their fundamental missions of education, research, and service.

If growing enrollment in HMOs and other managed care plans threatens the financial viability of academic health centers' hospitals, how do they respond, if at all? Do their financial margins fall? Do they cut back on their commitments to education or service to the poor? If financial survival comes at the expense of education or service to the poor, what can be done to preserve these activities?

This analysis provides information pertinent to addressing these questions by examining the experiences of academic health centers' hospitals over the time period 1994 through 1991-92. 1984 was the first full year of Medicare's Prospective Payment System, which significantly altered hospitals' financial incentives relative to the retrospective, cost-based reimbursement

system Medicare had been using to pay hospitals. 1991-1992 are the most recent years for which national data were available when this analysis began.

These data are not "up-to-the-minute." Many may feel that the pace of change in the growth of HMO enrollment has been so rapid in the last two years, that analysis based on data that are only a few years old will be out-of-date and not relevant to the current experience.

This view is too narrow. The time period covered by this analysis was also one of rapid growth in HMO enrollment. However, the rate of HMO growth varied across areas in the country. Comparing hospitals in high HMO growth areas, a few of which have nearly fifty percent of their population enrolled in HMOs, to hospitals in areas that experienced little HMO growth will provide some useful evidence about the potential consequences of a national HMO enrollment rate of 50 percent, as some predict will happen in a few years.

Examining past data is also useful for helping us understand and evaluate the current situation. As new data become available, we will be able to assess whether today's events are a continuation of a trend that has been going on for several years, or a true departure from the past. If the former, then examining hospitals' adjustments will provide useful information about the consequences for academic health centers' hospitals of the changing health care market.

RESEARCH DESIGN

Data

Hospital data for this analysis come from two sources: the American Hospital Association's Annual Survey of Hospitals and the Health Care Financing Administration's PPS Minimum Data Set, which is an extract of hospitals' Medicare Cost Reports. The former provides information on hospitals' services, patient care volume, and staffing, while the latter

reports information on hospitals' finances. Both sources are available annually, although the focus in this analysis will be on the first and last years of the time period.

The Annual Survey also collects revenue data from hospitals. However, this information is confidential and is not provided on the public access version of the Annual Survey data file. for the purpose of this analysis, the AHA's Hospital Data Center has conducted several special tabulations based on the confidential financial data. These tabulations are available for 1994 and 1992. The other hospital data span the years 1984 through 1991.

Information on HMO enrollment in individual metropolitan areas was obtained from the Group Health Association of America and InterStudy. Based on its annual survey of all HMOs, Interstudy publishes each HMO's location and its total enrollment. One problem with these enrollment data, especially for large HMOs that cover a wide geographic area, is that the entire enrollment is attributed to the location of the HMO's headquarters.

In order to adjust for this potential source of bias, we used data from two special surveys conducted by the Group Health Association of America in 1987 and 1991. These surveys asked HMOs in large metropolitan areas to allocate their enrollments to enrollees' places of residence. We then estimated a regression model to identify the relationship between the GHAA's enrollment figures and the InterStudy enrollments by metropolitan areas. The parameters of this model were then used to adjust the InterStudy data for the other years and MSAs for which GHAA enrollment information was not available.

Hospital Comparisons

An academic health center comprises an allopathic or osteopathic school of medicine, at least one other health professional school or program, and one or more teaching hospitals. For the purposes of this study, the universe of academic health centers' hospitals was limited

to short-term, general, nonfederal hospitals that are either owned by an academic health center or have a major and direct working affiliation with an academic health center. There are 102 academic health centers in the United States. With the assistance of staff from the Association of Academic Health Centers and the Council of Teaching Hospitals, we identified a universe of 127 academic health centers' (AHC) hospitals in 1993.

The analysis was limited to hospitals located in metropolitan statistical areas, as defined by the 1990 census. Over 98 percent of the AHC hospital universe is located in metropolitan areas, with 70 percent in areas with populations in excess of 1,000,000. Similarly, the majority of HMO enrollment is in metropolitan areas. In all, 57 metropolitan areas with at least one academic health center hospital are included in the analysis.

The metropolitan areas were then categorized into three groups. Low HMO growth and penetration metropolitan areas were defined as those that had less than 15 percent of their populations enrolled in HMOs throughout the time period. High growth and penetration areas had 15 percent or more of their population in HMOs throughout the time period or experienced an increase in HMO enrollment of 15 percent or more. The third group consists of all remaining areas, which are essentially an intermediate group. There are 22 areas and 52 AHC hospitals in the low group, 22 areas and 47 AHC hospitals in the high group, and 13 areas with 25 hospitals in the intermediate group. (Table 1 lists the individual metropolitan areas in the high and low groups, along with their 1984 and 1991 HMO penetration rates and the number of AHC hospitals in the analysis sample. The individual AHC hospitals are listed in the appendix.)

Figure 1 plots the time trends in HMO penetration for the low and high penetration areas. (The intermediate group is not included in the subsequent analysis in order to focus primarily on the potential differences between high and low HMO growth areas.) HMO penetration has been consistently three times larger in the high areas compared to the low, Although HMO

penetration has approximately doubled in both areas between 1984 and 1991, from 5.0 to 11.4 percent in the low penetration areas and from 16.4 to 32.7 percent in the high penetration areas, the absolute change in penetration was considerably higher in the high growth MSAs. Furthermore, the mean penetration rate in these areas was more than double the national proportion of people enrolled in HMOs, which was 15.3 percent in 1991.

In order to provide a frame of reference for evaluating trends in academic health centers' hospitals, the analysis also compares them to other large hospitals located in the same geographic areas, with large defined as 300 or more beds. The comparison group is divided into other hospitals with teaching programs and nonteaching hospitals. All hospitals in the comparisons are short-term, general, nonfederal institutions. In addition, hospitals included in the analysis reported valid financial data for both 1984 and 1991, so that the comparisons made over time are for a fixed set of institutions. This resulted in final samples of 76 AHC hospitals (77 percent) out of a universe of 99 institutions.

Table 2 documents the construction of the AHC hospital sample, and table 3 compares the AHC samples in each type of metropolitan area to their respective universes. Differences in operating characteristics between the two groups are very small. The universe in low HMO areas has a higher proportion of public hospitals than the sample, 53.8 percent compared to 44.1 percent. However, the proportions of public hospitals in the universe and sample in high HMO areas are very similar.

Variables

The god of this analysis is to identify whether growing HMO enrollment has eroded AHC hospitals' ability to carry out their missions of care to the poor and education/research. Unfortunately, 'mission" is a difficult concept to measure, especially with the secondary data that

are available for this analysis. Recognizing these inherent limitations, care to the poor will be measured by the shares of hospitals' care provided to Medicaid patients, and, in some tables, by hospitals' care for charity cases and bad debts. (At this time, the latter are available only at the national level by hospital type, rather than by high and low HMO penetration areas.)

The education/research mission is even more difficult to measure because both are multidimensional concepts that often overlap with direct patient care and service delivery. Moreover, very little data are consistently available on hospitals' research activities, because of the multiplicity of sources of support for research, including internal institutional funds. The proxy used in this analysis is the number in interns and residents per 1,000 adjusted admissions.' This measure is preferable to the more standard measure of graduate medical education (GME) intensity, the number of interns and residents per'bed, because of secular declines in occupancy rates and substantial growth of both patient care and education in outpatient settings.

The third key variable we examine is hospitals' total financial margin, defined as total revenue less total expense as a percentage of total revenue for the institution as a whole. In other words, our analysis of financial health includes both operating and nonoperating activities and revenue sources reported by the institution, as it defines itself for the purpose of the Medicare Hospital Cost Report. The reason for focusing on total margin is that even for nonprofit institutions like AHC hospitals, some reasonable and acceptable level of financial health is a necessary condition for meeting their objectives with regard to care for the poor and education/research, especially if these activities need to be subsidized from other flows of revenue to the hospital. Thus, if HMO growth challenges hospitals' financial health, then the

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'An adjusted admission is a weighted average of inpatient days and outpatient visits created by the AHA, with weights derived from the shares of total patient care charges in the inpatient and outpatient settings.

process of adjusting to the changing market environment may involve tradeoffs between 'mission and margin," and an analysis of possible changes in mission should simultaneously look at changes in margins,

A related measure of financial health is total deductions from patient care charges as a proportion of total charges (or gross revenue). Total deductions include writeoffs for charity and bad debts, discounts given to HMOs and other private third-party payers, and differences between government payments, especially for Medicare and Medicaid beneficiaries, and the charges incurred by those patients. Although this measure incorporates a number of different factors, variations in changes over time may be indicative of the impact of HMO growth and penetration on hospitals' financial health.

RESULTS

A General Comparison of AHC and Other Large Hospitals

Many discussions of AHC hospitals' unique situations focus on their marked differences compared to other hospitals and the presumed financial consequences of these differences. In order to provide the broad background for the more detailed analysis to follow, the data in table 4 illustrate how AHC and other large hospitals differ. Looking first at care to the poor, AHC hospitals provide almost a third of their care to poor people, defined as patients who are either covered by Medicaid or are charity cases or bad debts. This compares to patient care shares of about 21 percent for other teaching hospitals' care and 16 percent for nonteaching hospitals. Charity and bad debt cases received less than 6 percent of other and nonteaching hospitals' care, compared to 9.5 percent of care in AHC hospitals.

Academic health centers' hospitals are much more heavily involved in graduate medical education (and, by extension, in other health professions education and medical research) than other large hospitals, They employ more than four times as many interns and residents as other teaching hospitals, on both a per hospital and per adjusted admission basis. In the aggregate, they provide training to 56.3 percent of all interns and residents in larger hospitals (short-term, general, nonfederal), even though they account for only 15 percent of these institutions. Finally, as suggested by the data on service availability, much higher proportions of academic health centers' hospitals provide both high cost community services, such as inpatient AIDS units and level Ill obstetric/neonatal care, and state-of-the-art medical care, such as positron emission tomography scanning and organ transplantation.

Consistent with AHC hospitals' greater involvement with high cost and/or low revenue activities, their total margins are lower than those of other large hospitals. Thus, it seems straightforward enough to conclude that greater involvement with care to the poor and with medical education and research lead to lower financial margins.

The questions posed by this analysis, however, concern the extent to which the growth in HMO enrollments have affected AHC hospitals' missions and margins. Between 1984 and 1991/92, HMO enrollment in the nation's metropolitan areas, which is where the great majority of larger hospitals are located, more than doubled. Yet the data in table 5 indicate that AHC hospitals' margins actually increased over this period, while those of other large hospitals decreased slightly.

The data also show that AHC hospitals increased their care to Medicaid more than other hospitals and provided essentially the same amount of free care, as did other hospitals. Thus, cutbacks in care to the poor do not seem to be consistent with the changes in margins.

Rather, part of the explanation may lie in the differences in changes in total deductions from gross charges. In spite of their growing involvement with Medicaid, AHC hospitals experienced the smallest increase in total deductions, 9.1 percent, compared to 13.7 and 19.2 percents for other teaching and nonteaching hospitals, respectively. In fact, in 1992; the AHA data indicate that there were essentially no differences in the level of total deductions-it was just over 38 percent in all three groups of hospitals. Although total deductions includes factors other than discounts to HMOs and other private third-party payers, these data suggest that HMO growth in the aggregate may have had a smaller impact, at least through 1992, on AHC hospitals than on other hospitals.

AHC Hospitals in High and Low HMO Penetration MSAs, 1984-1991

Given the broad background of differences between AHC and other large hospitals and changes over time in HMO enrollment, this section of the analysis focuses on comparisons between AHC hospitals in high and low HMO penetration/growth areas. Specifically, have AHC hospitals in high HMO markets compromised their missions or suffered more financially than AHC hospitals in low HMO penetration markets?

The data in table 6 compare the two sets of hospitals' 1991 values and changes between 1984 and 1991 in Medicaid, graduate medical education, and total margin, In 1991, the hospitals in both areas had very similar characteristics. Medicaid comprised over 25 percent of inpatient discharges; there were slightly fewer than 11 interns and residents on staff per 1,000 adjusted admissions; and total margins were just under 4 percent.

The data in table 6 also show that hospitals in the two sets of areas reached their common destinations from different starting points. The growth in Medicaid was almost twice as large in the AHC hospitals in low HMO penetration areas as in the high penetration areas,

11.6 percent compared to 6.3 percent. In fact, the high HMO penetration hospitals began with a higher average Medicaid proportion, so that these absolute changes understate the proportional growth in Medicaid in the two sets of institutions. Similarly, the hospitals in the high HMO penetration areas experienced very little change in their graduate medical education involvement, while the low HMO area hospitals expanded by about 7 percent. Perhaps as a partial consequence of these different trajectories, AHC hospitals' margins in the high HMO areas actually grew slightly, by 0.4 percent, while those of AHC hospitals in the low HMO areas fell by nearly twice as much, -0.7 percent.

Looking more broadly at the revenue and expense changes in the AHC hospitals in these two areas, the data in table 7 clearly suggest much lower revenue growth in the high HMO areas compared to the low HMO areas, 71.2 and 96.2 percent respectively. In response, the AHC hospitals in the high penetration areas constrained their total expense growth even more, in part by essentially freezing overall staffing levels. In the low penetration areas, AHC hospitals' expense growth was slightly greater than their revenue growth, and staffing grew by almost 20 percent, by 2.0 full-time-equivalent employees per 100 adjusted admissions, compared to an increase of less than 2 percent, only 0.2 FTE staff per 100 adjusted admissions, in the high HMO penetration hospitals. Although these changes are consistent with the argument that HMO growth extracts bigger discounts from hospitals' charges, the data on the changes in total deductions from gross charges show a relatively small difference between hospitals in the two sets of areas. The increase in deductions was slightly larger in the high HMO penetration areas, as one would expect. Contrary to expectations, this higher growth in deductions did not lead to a fall or a smaller increase in total margins.

AHC and Other Large Hospitals in High HMO Penetration MSAs, 1984-1997

Like politics, almost all hospital care is local. By and large, AHCs in high and low HMO penetration areas do not compete with each other for patients (though they certainly compete for faculty and trainees in their education and research activities,) Thus, in attempting to assess the effects of HMO growth, it is important to examine how AHC hospitals compare to other large hospitals in the same market areas. Where HMO penetration and growth have been high, have AHC hospitals 'done worse" than other large hospitals?

Table 8 presents data from high HMO penetration MSAs by hospital teaching status on mission and margin in 1991, and changes between 1984 and 1991. Both in 1991 and over time, the comparisons of mission parallel those shown earlier for AHC hospitals nationally-greater involvement and greater growth in both care for the poor and graduate medical education. Yet, in spite of these differences, in 1991 AHC hospitals had higher margins than both other teaching and nonteaching hospitals, and their better financial health had come about because of improvement over time, as compared to substantial drops in margins for the other two groups of hospitals.

Looking more broadly at expense and revenue growth and at changes in deductions from gross revenue (table 9), all three sets of hospitals constrained their expense growth by essentially the same amount, just over 70 percent between 1984 and 1991. (The other teaching and nonteaching hospitals also had much lower expense growth than similar hospitals in low HMO penetration areas, where expenses grew by over 90 percent.) However, AHC hospitals experienced higher revenue growth than other large hospitals in their markets, in part, apparently, by constraining the growth of total deductions, which increased by about a third in AHC hospitals, over 75 percent in other teaching hospitals, and more than doubled in nonteaching hospitals. Since data presented earlier do not suggest major growth in either

Medicaid or free care in the non-AHC hospitals, it is possible that much of the differential in the growth of total deductions may be due to the effects of increased HMO penetration (and other managed care activities).

One question that arises in examining these data is whether AHC hospitals in markets with more than one AHC experienced the same changes as AHC hospitals in markets where they are the only AHC. Two-thirds of the AHC hospitals in the high HMO penetration sample were located in nine MSAs with two or more AHC hospitals. The data in table 10 suggest that there were in fact substantial differences associated with the degree of intra-AHC hospital competition.

The 28 AHC hospitals in MSAs with two or more such institutions had considerably lower margins to begin with, 2.5 percent compared to 5.5 percent in 1984, but improved their margins to 4.0 percent over time, while margins in the single AHC, high HMO penetration MSAs fell to 3.8 percent. Revenue growth in the two sets of areas was the same, just over 71 percent, so this does not explain the different changes in margins. Rather, in MSAs where AHC hospitals potentially compete with each other, total expenses, Medicaid shares, and total deductions from gross revenues all grew more slowly than in the other high HMO penetration markets, and intern and resident staffing actually fell slightly. Thus, while the experiences of AHC hospitals in high HMO penetration areas differed from those located in low penetration areas, it was not uniform and appears to have been affected by the extent of intra-AHC hospital competition as well as by HMO growth.

AHC Hospitals' Market Shares, 1984-1991

Another way of assessing the potential impact of growing HMO penetration is to look at different hospitals' market shares. As was noted in the introductory section, one way in which

HMOs may affect hospitals and markets is by shifting their members from high to low cost hospitals. AHC hospitals fear that since they are clearly the most costly hospitals, they are at greatest risk of losing market shares because of HMO growth, In table 11, we present information on AHC hospitals' market shares in low and high HMO penetration MSAs for three different dimensions of their activities: all inpatient hospital admissions, Medicaid inpatient cases, and interns and residents. The data show that AHC hospitals' shares of the total inpatient market actually increased in both high and low HMO penetration areas, although it increased more in the low HMO penetration MSAs. (Figures for adjusted admissions, which include outpatient care, are very similar.) In contrast, AHC hospitals in high HMO penetration areas contracted their share of care to Medicaid inpatients by 2.9 percent, while in the low penetration markets the AHC hospitals expanded their Medicaid shares by almost exactly the same amount that their share of total inpatient cases grew. The distributions of interns and residents among hospitals in these different markets appear to have been unaffected by HMO growth, with AHC hospitals in both sets of areas expanding their shares slightly, by 8.0 and 8.2 percent in the low and high HMO penetration markets, respectively.

If AHC hospitals' market shares were expanding over this time period, at whose expense did their bigger shares come? Table 12 presents national data for AHC hospitals, other large hospitals, and smaller hospitals located in the same markets as AHC hospitals. Nationally, AHC hospitals expanded their shares not only of total care, measured by total charges for all patient care services, but also of Medicaid and free care. This growth came entirely out of smaller hospitals' market shares, which fell by 21.6 percent for total care and 37.7 percent for Medicaid. Other large hospitals' shares also grew, but less than half as much as AHC hospitals' shares.

DISCUSSION

What do these comparisons suggest and how applicable are they to the situations AHC hospitals face today and over the next several years? Is this analysis contemporary history with direct implications for the future, or ancient history? Aside from the question of the association between HMO growth and AHC hospitals' activities and operations, are there any lessons for how hospitals respond to changing market environments? If they do respond to financial pressures or constraints, how do they respond?

From one perspective, the comparisons reported present somewhat of a paradox. Those institutions in potentially the most vulnerable situation-AHC hospitals in high HMO penetration markets with two or more AHC hospitals--appear to have improved their financial health the most. They started off with the lowest total margins in 1984, 2.5 percent, and improved them to an average of 4.0 percent, which was slightly higher than the margins of any other group of large hospitals in high HMO penetration markets and of AHC hospitals in low HMO penetration markets. Their average margins ranged from 3.5 to 3.8 percent.

Does this finding mean that the HMO threat is just that, an unrealized threat? The answer, we believe, is "No," and the resolution of the paradox lies in understanding how hospitals appear to have responded to growing HMO enrollments.

Lower revenue growth for all large hospitals in the high HMO penetration markets, 71 percent over the seven years compared to 96 percent in the low HMO markets, suggests that the threat was real and constraining. The AHC hospitals responded by limiting their cost growth more than other hospitals, especially in MSAs where they compete with each other, and protecting their 'collection rates,' i.e., deductions from gross charges, better than other hospitals. Ironically, AHC hospitals' heavy involvement with Medicaid may have been an advantage rather than a liability in terms of protecting revenue growth. Federal mandates to

expand Medicaid eligibility, primarily for pregnant women and newborns, and improve Medicaid payments to hospitals, especially through disproportionate share programs probably benefited AHC hospitals more than other large hospitals. Nevertheless, Medicaid expansion was about half as large in the AHC hospitals in high HMO penetration markets as in the low penetration markets.

AHC hospitals' lower cost growth was attained by essentially freezing staffing levels, both in general and for graduate medical education. (Information on capital spending will be analyzed in future work on this project.) What cannot be assessed from this type of analysis is whether these limits represent increases in efficiency or reductions in the quality of care.

Similarly, many view a freeze on GME expansion by AHC hospitals as a positive factor from a broader social perspective. Both the national market for subspecialists and the local physician markets in high HMO penetration MSAs may be saturated. However, even with the lower growth in GME staffing in AHC hospitals in high HMO markets, their overall share of interns and residents in those markets actually increased slightly. This suggests that to the extent that there is actual contraction in GME in these areas, it may occur first in the more 'marginal" programs in hospitals that are not heavily committed to or involved with GME.

It also seems likely that intern and resident positions will remain stable as long as Medicare does not cut or eliminate its support for GME. Much more vulnerable, we believe, are clinical faculty positions. For example, the Washington Post (Saturday, September 24, 1994, p. A4) reported that the Department of Medicine at UCLA reduced the number of full-time cardiologists from 17 to 10 and the number of dermatologists from 7 to 2, with no reductions in patient volume. In the cold language of modern management, these cuts were called 'productivity enhancements." At the same time, it was claimed that the quality of graduate medical education was not affected. Other adjustments could take the form of slower growth

in residents' stipends and faculty salaries. None of these changes is pleasant for those involved, but the past clearly shows that institutions adjust.

The primary implication for the future, it would seem, is that AHC hospitals, even with their substantial missions of care to the poor, medical education, community service, and medical research, will take measures to preserve their financial viability when external changes, such as growing HMO enrollment and other managed care insurance plans, alter the economic environment ir whic they operate. Over the time period analyzed, other large hospitals and smaller hospitals appear to have been easier "targets of opportunity' for expanding HMO. Other hospitals had larger initial margins and more to give in the form of price concessions than did AHC hospitals. Smaller hospitals probably suffered from not being able to offer the quality and comprehensiveness of services that HMOs presumably wish to include in their insurance package. Consequently, smaller hospitals lost a considerable share of the market and other large hospitals saw their margins fall as their deductions from gross charges, which include price concessions to HMOs, increased.

Academic health centers' hospitals were able to expand their market shares, primarily by being able to hold on to their patients as the overall market for inpatient care was contracting, and turned to cost control, for better or worse, as a major response to slower revenue growth. From a strictly clinical perspective, AHC hospitals' higher average complexity of inpatient care[2] makes it difficult for HMOs to shift patients either to the nonteaching hospitals or to outpatient settings. Moreover, HMOs may value both the actual and perceived higher quality that AHC hospitals offer for complex cases.

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[2] In 1991, the Medicare case mix index was 1.603 for major teaching hospitals, 1,462 for other teaching hospitals, and 1.278 for nonteaching hospitals (ProPAC, June 1993, p. 49).

But that was then and this is now. If in fact the relatively easy adjustments to growing managed care have been made already, then the current and next few years may be much more difficult and require different types of responses-greater collaboration between academic health centers' hospitals and other, nonteaching institutions to restructure how care is provided and to present a stronger negotiating front for dealing with managed care organizations; serious rethinking about how, where, and at what cost graduate medical education is provided; and reevaluations of the extent to which AHC hospitals are able to continue their heavy involvement and subsidization of care to the poor if other revenues, whether from local or federal sources, are unavailable to replace funds generated from care to privately insured patients.

While these are difficult issues for AHC hospitals, the past also suggests that these institutions have unique strengths and qualifications that give them a strong market position, in spite of their apparently higher costs. Moreover, they have demonstrated their ability to adjust and respond to changing market conditions. Knowing that AHC hospitals will adapt, however, makes it all the more important to evaluate the costs and consequences, for both their local communities and the nation, of the changes that occur as a result of preserving their financial viability.

Figure1
Trends in HMO Penetration in Low and High HMO Growth MSAs

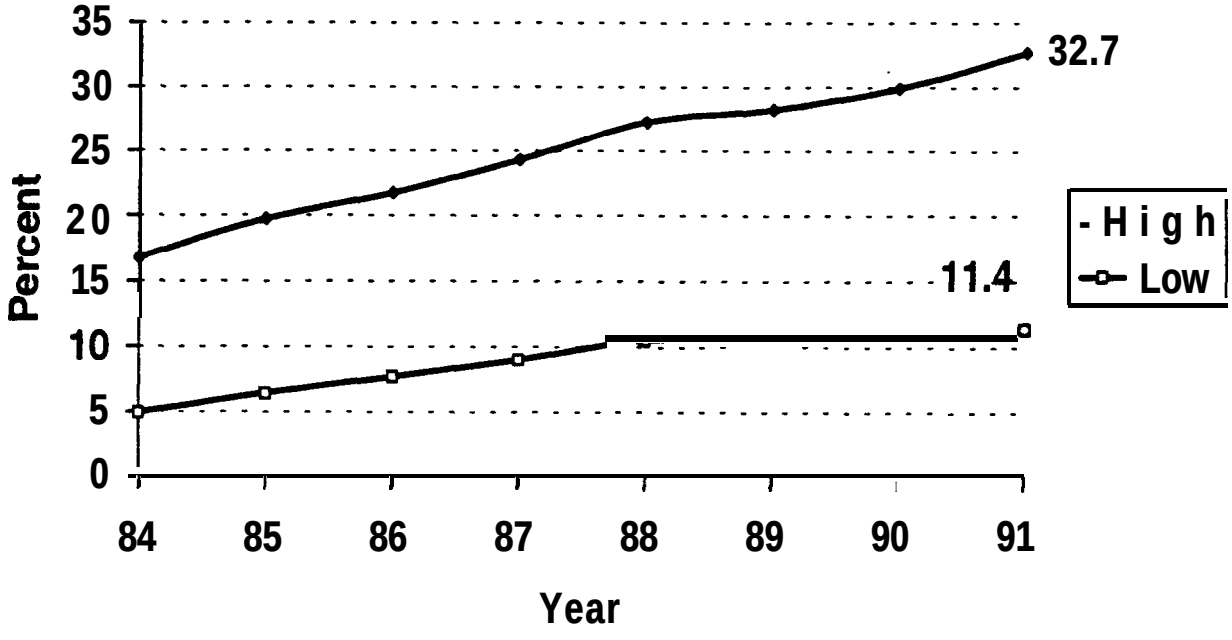

Table 1

Metropolitan Areas in High and Low
HMO Growth/Penetration Areas

Metropolitan Area by HMO Penetration	HMO Penetration		Number of AHC Hospitals in Sample
	1991	1984	
High			
Rochester, NY	53.5	14.5	1
Madison, WI	53.4	37.8	1
Worcester, MA	50.7	25.5	1
San Francisco-Oakland-San Jose-Sacramento, CA	49.6	34.2	4
Minneapolis-St. Paul-MN, WI	46.0	52.2	1
Albuquerque, NM	40.1	11.3	1
Tucson, AZ	39.9	18.5	1
Milwaukee-Racine, WI	36.3	21.8	1
Los Angeles-Anaheim-Riverside-San Diego, CA	36.2	24.2	6
Portland-Vancouver-OR-WA	34.3	22.6	1
Albany-Schenectedy-Troy, NY	32.7	7.6	1
Boston-Lawrence-Salem, MN-NH	31.5	13.4	5
Burlington, VT	31.2	0.0	1
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD	28.5	9.2	5
Buffalo-Niagara Falls, NY	27.1	7.3	1
Hartford-New Britain-Middletown, CT	26.9	5.0	1
Washington, DC-MD-VA/ Baltimore, MD	25.7	8.7	4
Harrisburg-Leb.-Carl. PA	24.3	0.0	1
Lexington, KY	23.2	0.0	1
Birmingham, AL	22.3	3.4	1
Seattle-Tacoma, WA	19.8	16.3	2
New Orleans, LA	16.4	0.0	1

Table 1 (Continued)

Metropolitan Area by HMO Penetration	HMO Penetration		Number of AHC Hospitals in Sample
	1991	1964	
Low			
Raleigh-Durham, NC	14.6	3.0	1
New Haven-Meridien, CT	14.3	6.3	1
Toledo, OH	14.2	2.4	1
Atlanta, Ga	13.7	7.0	2
New York-Northern New Jersey-LI, NY-NJ-CT	13.1	6.4	6
Omaha, IA-NE	12.9	1.1	1
Indianapolis, IN	12.6	11.6	2
Little Rock-N.L. Rock, AR	12.5	0.1	1
Dallas-Fort Worth, TX	12.1	4.2	2
Louisville, KY-IN	11.9	3.4	1
San Antonio, TX	10.9	4.0	1
Oklahoma City, OK	10.6	3.1	1
Houston-Galveston-Bratoria, TX	10.4	5.9	3
Greensboro-Winston-Salem-High Point, NC	9.0	4.4	1
Nashville, TN	8.4	4.3	2
Mobile, AL	4.3	0.6	1
Rochester, MN	3.9	0.0	2
Charleston-North Charleston, S.C	3.7	0.0	1
Augusta-Aiken, GA	1.7	0.0	1
Charlottesville, VA	0.0	0.0	1
Columbia, MO	0.0	0.0	1
Gainesville, FL	0.0	0.0	1

Table 2

AHC Universe and Sample Hospitals, 1991

Total U.S.	127
Total, MSAs[a]	124
Total in Study MSAs	
High HMO Penetration	47
Low HMO Penetration	52
Sample Hospitals in MSAs[b]	
High HMO Penetration	42
Low HMO Penetration	34

Notes:

a. Three of these hospitals were not AHC hospitals in 1984, and were excluded from subsequent analyses.

b. In order to be retained in the analysis, a hospital had to report valid financial data for both 1984 and 1991. Fifteen hospitals had missing data in 1984; 5 were missing data in 1991; 3 had missing data in both years.

Table 3

Comparison of Sample and Universe AHC Hospitals, by Type of MSA, 1991

	Type of MSA			
	High HMO		Low HMO	
	Universe	Sample	Universe	Sample
(N)	(47)	(42)	(52)	(34)
Public (%)	38.1	38.3	53.8	44.1
Beds	538.3	541.7	689.3	661 .o
Medicaid (%)	27.8	27.9	27.0	25.6
Exoense oer Adi. Adm. ($)	9.972.6	10,324.6	9,707-l	9,585.5
FTEs per 100 Adj. Adm.	12.1	12.1	12.8	12.8
Interns & Residents per 1,000 Adj. Adm.	11.0	10.9	11.0	10.8

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Table 4

Selected Characteristics of Large Hospitals,
U.S., 1991/92, by Teaching Status

	Hospital Teaching Status		
	AHC	Other Teaching"	Nonteaching"
(N)	(121)	(406)	(287)
Care to the Poor, 1992'			
Medicaid (%)	22.7	15.6	10.7
Free Care (%)	9.5	5.7	5.2
Interns and Residents, 1991			
per 1,000 Adjusted Admissions[b]	11.0	2.6	0.2
per hospital	293.5	66.8	3.7
share of total	56.3%	42.1%	1.6%
High Cost Community Services, 1991			
Inpatient AIDS Unit (%)	31.4	7.6	2.1
Regional Trauma (%)	60.6	19.0	1.7
Level III OB (%)	64.6	36.5	10.5
High Tech Services, 1991			
Extracorporeal Shockwave Lithotripter (%)	53.7	18.2	18.8
PET Scanner (%)	16.5	3.4	4.5
Organ Transplant (%)	69.4	17.7	8.7
Financial Status, 1991			
Total Margin (%)	3.9	4.5	5.7

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Table 5

1984-1991 Changes in Margins, Care to the Poor, and
Total Deductions, Large Hospitals, U.S.,
by Teaching Status

	Hospital Teaching Status		
	AHC	Other Teaching[b]	Nonteaching[b]
	(absolute percentage change)		
Total Margin	1.1	-1.0	-0.7
Medicaid	7.0	3.1	1.4
Free Care	-0.2	-0.3	0.0
Total Deductions from Gross Charges"	9.1	13.7	19.2

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Table 6

Mission and Margin in AHC Hospitals,
High and Low HMO Penetration MSAs, 1984 and 1991
(number of hospitals)

	HMO Penetration			
	Low (34)		High (42)	
	1991 Level	1984-l 991 Abs. Change	1991 Level	1984-l 991 Abs. Change
Medicaid (%)	25.6	11.6	27.9	6.3
Interns and Residents (per 1,000 Adj. Adms.)	10.8	0.7	10.9	0.1
Total Margin (%)	3.8	-0.7	3.9	0.4

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Table 7

Revenues and Expenses in AHC Hospitals,
High and Low HMO Penetration MSAs, 1984 and 1991
(number of hospitals)

	HMO Penetration			
	Low (34'		High (42)	
	1991 Level	1984-l 991 Pct. Change	1991 Level	1984-l 991 Pct. Change
Total Revenue ($ per Adj. Admit.)	9,945	96.2	10,753	71.2
Total Expense ($ per Adj. Admit)	9,586	98.3	10,324	70.2
FTEs (per 100 Adj. Admit.)	12.8	18.5	12.0	1.7
Total Deductions from Gross Charges (%)	31.4	2 9 . 8	34.3	34.0

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Table 8

Mission and Margin in AHC and Other Large Hospitals, High HMO Penetration MSAs, 1984-1991 (number of hospitals)

	Hospital Teaching Status					
	AHC (42)		Other Teaching (94)		Nonteaching (37)	
	1991 Level	1984-1991 Abs. Change	1991 Level	1984-1991 Abs. Change	1991 Level	1984-1991 Abs. Change
Medicaid (%)	27.9	6.3	14.0	3.8	11.0	2.6
Interns and Residents (per 1,000 Adj. Admits.)	10.9	0.1	2.3	-0.4	--	--
Total Margin (%)	3.9	0.4	3.7	-4.0	3.5	-4.1

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Table 9

Revenues and Expenses in AHC and Other Large Hospitals,
High HMO Penetration MSAs, 1984-1991
(number of hospitals)

	Hospital Teaching Status					
	AHC (42)		Other Teaching (94)		Nonteaching (37)	
	1991 Level	1984-l 991 Pct. Change	1991 Level	1984-l 991 Pct. Change	1991 Level	1984-l 991 Pct. Change
Total Revenue ($ per Adj. Admits.)	10,753	71.2	7,067	64.4	6,993	61.2
Total Expense ($ per Adj. Admits.)	10,324	70.2	6,807	71.3	5,864	70.1
Total Deductions from Gross Charges (%)	34.3	34.0	35.7	78.5	36.1	116.2

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Table 10

AHC Hospitals' Characteristics in
High HMO Penetration MSAs, by Extent of
AHC Hospital Competition, 1984-l 991
(number of hospitals)

	AHC Hospital Competition			
	Only One AHC (14)		Two or More AHCs (28)	
	1991 Level	1984-l 991 Pct. Change	1991 Level	1984-l 991 Pct. Change
Medicaid (%)	22.2	37.9	30.8	27.3
Interns and Residents (per 1,000 Adj. Admits.)	11.2	8.7	10.7	-2.7
Total Margin (%)	3.8	-30.9	4.0	60.0
Total Revenue ($ per Adj. Admit.)	9,659	71.3	11,300	71.1
Total Expense ($ per Adj. Admit.	9,304	78.2	10,834	66.9
Total Deductions from Gross Revenue (%)	27.8	58.9	37.6	30.1

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Table 11

Changes in AHC Hospitals' Market Shares,
High and Low HMO Penetration MSAs, 1964-l 991

	Percentage Change in Market Share [a]	
	Low HMO Penetration	High HMO Penetration
Total Admissions	15.6	9.3
Medicaid (Inpatient)	15.3	-2.9
Interns and Residents	8.0	8.2

Notes: a. Includes all short-term, general nonfederal hospitals in the same MSAs.

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Table 12

Changes in Market Shares by
Hospital Type, 1984-I 992
(All Areas with AHC Hospitals)

Type of Care[b]	Percentage Change in Market Share[a]		
	AHC	Other Large[c]	Smaller[d]
All Patient Care	13.8	6.1	-21.6
Medicaid	18.9	10.0	-37.6
Free Care	11.7	3.4	-24.9

Notes: a. Includes all short-term, general, nonfederal hospitals in the same market areas as an AHC hospital.

b. Measured in total gross charges,

c. Includes other teaching and nonteaching hospitals with 300 or more beds.

d. Hospitals with fewer than 300 beds.

APPENDIX

AHC HOSPITALS IN SAMPLE

Metropolitan Area by HMO Penetratlon	Hospital Name	City	State
High			
Rochester, NY	STRONG MEM HOSP ROCHESTER UNIV	ROCHESTER	New York
Madison, WI	UNIV OF WI HOSPITAL & CLINICS	MADISON	Wisconsin
Worcester, MA	UNIV OF MASSACHUSETTS MED CTR	WORCESTER	Massachusetts
San Francisco-Oakland-San Jose/ Sacramento, CA	STANFORD UNIVERSITY HOSPITAL	STANFORD	California
	UNIV OF CALIF, DAVIS MED CNTR	SACRAMENTO	California
	SAN FRANCISCO GEN HOSP MED CTR	SAN FRANCISCO	California
	UNIV OF CALIF SAN FRANCISCO	SAN FRANCISCO	California
Minneapolis-St. Paul, MN-WI	UNIV OF MINN HOSP & CLINIC	MINNEAPOLIS	Minnesota
Albuquerque, NM	UNIVERSITY HOSPITAL	ALBUQUERQUE	New Mexico
Tucson, AZ	UNIVERSITY MEDICAL CENTER	TUCSON	Arizona
Milwaukee-Racine, WI	FROEDTERT MEM LUTHERAN HOSP	MILWAUKEE	Wisconsin
Los Angeles-Anaheim-Riverside/ San Diego, CA	LOMA LINDA UNIVERSITY MED CNTR	LOMA LINDA	California
	LAC-USC MEDICAL CENTER	LOS ANGELES	California
	UCLA MEDICAL CENTER	LOS ANGELES	California
	UNIV OF CALIF IRVINE MED CNTR	ORANGE	California
	UNIV OF CA SAN DIEGO MED CTR	SAN DIEGO	California
	LAC-HARBOR-UCLA MED CENTER	TORRANCE	California
Portland-Vancouver, OR-WA'	UNIVERSITY HOSPITAL	PORTLAND	Oregon
Albany-Schenectedy-Troy, NY	ALBANY MEDICAL CENTER HOSPITAL	ALBANY	New York
Boston-Lawrence-Salem, MN-NH	BOSTON CITY HOSPITAL	BOSTON	Massachusetts
	BRIGHAM AND WOMEN'S HOSPITAL	BOSTON	Massachusetts
	MASSACHUSETTS GENERAL HOSPITAL	BOSTON	Massachusetts
	UNIVERSITY HOSPITAL	BOSTON	Massachusetts
	NEW ENGLAND MEDICAL CENTER	BOSTON	Massachusetts
Burlington, VT	MEDICAL CENTER HOSP OF VERMONT	BURLINGTON	Vermont
Philadelphia-Wilmington-Trenton, PA-NJ-DE-MD	HAHNEMANN UNIVERSITY HOSPITAL	PHILADELPHIA	Pennsylvania
	HOSPITAL OF THE UNIV OF PENN	PHILADELPHIA	Pennsylvania
	MEDICAL COLLEGE HOSPITALS	PHILADELPHIA	Pennsylvania
	THOMAS JEFFERSON UNIV HOSPITAL	PHILADELPHIA	Pennsylvania

Metropolitan Area by HMO Penetration	Hospital Name	city	State
	TEMPLE UNIVERSITY HOSPITAL	PHILADELPHIA	Pennsylvania
Buffalo-Niagara Fails, NY	BUFFALO GENERAL HOSPITAL	BUFFALO	New York
Hartford-New Britain-Middletown, CT	UNIV OF CONN HEALTH CENTER	FARMINGTON	Connecticut
Washington, DC-MD-VA/Baltimore, MD	JOHNS HOPKINS HOSPITAL	BALTIMORE	Maryland
	UNIV OF MARYLAND MED SYSTEM	BALTIMORE	Maryland
	GEORGETOWN UNIVERSITY HOSPITAL	WASHINGTON	Dist. of Columbia
Washington, D.C.-MD-VA/Baltimore, MD	GEORGE WASHINGTON UNIV HOSP	WASHINGTON	Dist. of Columbia
Harrisburg-Leb.-Carl. PA	PENN STATE UNIV HOSP	HERSHEY	Pennsylvania
Lexington, KY	UNIVERSITY OF KENTUCKY HOSP	LEXINGTON	Kentucky
Birmingham, AL	UNIVERSITY OF ALA HOSPITAL	BIRMINGHAM	Alabama
Seattle-Tacoma, WA	HARBORVIEW MEDICAL CENTER	SEATTLE	Washington
	UNIV OF WASHINGTON MEDICAL CTR	SEATTLE	Washington
New Orleans, LA	TULANE UNIV HOSP & CLINICS	NEW ORLEANS	Louisiana
Low			
Raleigh-Durham, NC	UNIV OF NORTH CAROLINA HOSPS	CHAPEL HILL	North Carolina
New Haven-Meridien CT	YALE-NEW HAVEN HOSPITAL	NEW HAVEN	Connecticut
Toledo, OH	MEDICAL COLLEGE OF OHIO HOSP	TOLEDO	Ohio
Atlanta, GA	CRAWFORD LONG HOSP EMORY UNIV	ATLANTA	Georgia
	EMORY UNIVERSITY HOSPITAL	ATLANTA	Georgia
New York-Northern New Jersey-L& NY-NJ-CT	MONTEFIORE MEDICAL CENTER	BRONX	New York
	MOUNT SINAI MEDICAL CENTER	NEW YORK	New York
	PRESBY HOSP IN THE CITY OF NY	NEW YORK	New York
	SOCIETY OF THE NEW YORK HOSP	NEW YORK	New York
	UNIVERSITY HOSPITAL	STONY BROOK	New York
	ROBERT WOOD JOHNSON UNIV HOSP	NEW BRUNSWICK	New Jersey
Omaha, IA-NE	AMI SAINT JOSEPH HOSPITAL	OMAHA	Nebraska
Indianapolis, IN	WILLIAM N WISHARD MEM HOSPITAL	INDIANAPOLIS	Indiana
	INDIANA UNIVERSITY MED CENTER	INDIANAPOLIS	Indiana
Little Rock-N.L.Rock, AR	UNIVERSITY HOSP OF ARKANSAS	LITTLE ROCK	Arkansas
Dallas-Fort Worth, TX	BAYLOR UNIV MEDICAL CENTER	DALLAS	Texas
	DALLAS COUNTY HOSPITAL DIST	DALLAS	Texas
Louisville, KY-IN	HUMANA HOSPITAL-UNIVERSITY	LOUISVILLE	Kentucky
San Antonio, TX	BEXAR COUNTY HOSPITAL DISTRICT	SAN ANTONIO	Texas
Oklahoma City, OK	OKLAHOMA MEDICAL CENTER	OKLAHOMA CITY	Oklahoma