COUNCIL ON GRADUATE MEDICAL EDUCATION

Sixth Report

Managed Health Care:

Implications for the Physician Workforce and Medical Education

SEPTEMBER 1995

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September 1995

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Health Resources and Services Administration

The views expressed in this document are solely those of the Council on Graduate Medical Education and do not necessarily represent the views of the Health Resources and Services Administration nor the U.S. Government.

The Council on Graduate Medical Education (COGME)

COGME was authorized by Congress in 1986 to provide an ongoing assessment of physician workforce trends and to recommend appropriate Federal and private sector efforts to address identified needs. The legislation calls for COGME to serve in an advisory capacity to the Secretary of the Department of Health and Human Services (DHHS), the Senate Committees on Labor and Human Resources, and the House of Representatives Committee on Commerce. By statute, the Council terminates on September 30, 1995.

The legislation specifies that the Council is to comprise 17 members. Appointed individuals are to include representatives of practicing primary care physicians, national and specialty physician organizations, international medical graduates, medical student and house staff associations, schools of medicine and osteopathy, public and private teaching hospitals, health insurers, business, and labor. Federal representation includes the Assistant Secretary for Health, DHHS; the Administrator of the Health Care Financing Administration, DHHS; and the Chief Medical Director of the Veterans Administration.

Charge to the Council

Although called the Council on Graduate Medical Education, the charge to COGME is much broader. Title VII of the Public Health Service Act in Section 799(H), as amended by Public Law 99-272, as amended by Title III of the Health Professions Extension Amendments of 1992, requires that COGME provides advice and makes recommendations to the Secretary and Congress on the following:

1. The supply and distribution of physicians in the United States.
2. Current and future shortages or excesses of physicians in medical and surgical specialties and subspecialties.
3. Issues relating to foreign medical school graduates.
4. Appropriate Federal policies with respect to the matters specified in (1), (2), and (3) above, including policies concerning changes in the financing of undergraduate and graduate medical education programs and changes in the types of medical education training in graduate medical education programs.
5. Appropriate efforts to be carried out by hospitals, schools of medicine, schools of osteopathy, and accrediting bodies with respect to the matters specified in (1), (2), and (3) above, including efforts for changes in undergraduate and graduate education programs.
6. Deficiencies in, and needs for improvements in, existing data bases concerning the supply and distribution of, and postgraduate training programs for, physicians in the United States and steps that should be taken to eliminate those deficiencies. The Council is to encourage entities providing graduate medical to conduct activities to voluntarily achieve the recommendations of this Council under (5) above.

COGME Reports

Since its establishment, COGME has submitted or is in the process of completing the following reports to the DHHS Secretary and Congress:

- First Report of the Council, Volume I and Volume II (1988)
- Second Report: The Financial Status of Teaching Hospitals and the Underrepresentation of Minorities in Medicine (1990)
- Scholar in Residence Report: Reform in Medical Education and Medical Education in the Ambulatory Setting (1991)
- Third Report: Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century (1992)
- Fourth Report: Recommendations to Improve Access to Health Care Through Physician Workforce Reform (1994)
- Fifth Report: Women and Medicine (1995)
- Sixth Report: Managed Health Care: Implications for the Physician Workforce and Medical Education (1995)
- Seventh Report: Physician Workforce Funding Recommendations for Department of Health and Human Services' Programs (1995)
- Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations (late 1995)

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We gratefully acknowledge the assistance of J. Jon Veloski and Howard K. Rabinowitz, M.D., of Thomas Jefferson University, Philadelphia, and Barbara Barzansky, Ph.D., of the AMA, contractors to our Council who prepared the draft that formed the Council's Sixth Report (HRSA contract No. 240-93-0040). Also COGME acknowledges the contributions of Jonathan Weiner, Dr.P.H., of The Johns Hopkins University, Baltimore, and G. Gordon Moore, M.D., of the Harvard Community Health Plan, Boston, who developed technical reports under contract to the Council, and which formed the basis for the findings and conclusions contained in the Sixth Report.

Other Work Groups and Staff

We also are indebted to COGME's Policy Options Work Group, Lawrence Haspel, D.O., Chair, staffers F. Lawrence Clare, M.D., M.P.H., and Stanford Bastacky, D.M.D., and contractor, Gerard F. Anderson, Ph.D., of The Johns Hopkins University, developers of the Seventh Report; and COGME's Supply-Requirements Work Group, Jack Colwill, M.D., Chair and staffers Robert Politzer, M.S., Sc.D., and Sandra Gamliel, developers of the Eighth Report, for providing important input into the Sixth Report.

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REPRINTS, REPORTS AND BACKGROUND PAPERS

Reprints of the article and copies of the full report may be obtained by writing to Dr. Marc Rivo, COGME, 5600 Fishers Lane, Room 9A-27, Rockville MD 20857 (301-443-8890 fax).

The four background papers which contributed to this report may be obtained through order from the National Technical Information Service (phone 703-487-4650). They are:

(1) *Assessing the Impact of Managed Care on the Physician Workforce,* Jonathan Weiner, Dr.P.H. (ordering number PB94-142288)

(2) *The Impact of Managed Care on the Medical Education Environment,* Gordon Moore, M.D. (ordering number PB94-142296)

(3) *COGME 1995 Physician Workforce Funding Recommendations for Department of Health and Human Services' Programs,* COGME's Seventh Report to Congress and the HHS Secretary.

(4) *Patient Care Supply and Requirements: Testing COGME Recommendations,* COGME's Eighth Report to Congress and the HHS Secretary.

I. Executive Summary

FINDINGS

Finding # 1: Managed care has been growing rapidly in both the private and public sectors, and in most geographic areas, and this growth is likely to continue or accelerate in the future.

Managed care reflects a broad set of fundamental changes taking place in the health care system, characterized in both the delivery and financing of health care. Each of the various types of managed care has been growing in recent years, with health maintenance organizations (HMOs) and preferred-provider organizations (PPOs) having grown 3 to 4-fold in the past decade, and more recently with point-of-service (POS) and other hybrid plans rapidly emerging. Almost two-thirds of employees in large firms are now in HMOs, PPOs, or POS plans, and the number of federal employees and Medicaid and Medicare recipients enrolled in managed care programs has more than doubled over the past decade (increasing to approximately 39 percent, 12 percent, and 7 percent of their respective populations).

Despite the concern of many physicians about managed care, over three-fourths have at least one managed care contract, and almost one-half are involved with at least one HMO. While managed care has increased in most areas, wide geographic variation remains, ranging from 0 to 35 percent of the population enrolled among states, and from less than 10 percent to greater than 50 percent among metropolitan areas. Continued pressures from government and business to increase the quality and cost effectiveness of medical care will reinforce this trend of managed care growth, which appears to be irreversible, and which many experts predict will accelerate.

Finding # 2: The growth in managed care will magnify the physician workforce concerns expressed by COGME in prior reports, that there is a large and growing oversupply of physicians overall and especially of specialists and subspecialists, and that there is a modest need for more generalist physicians.

Health maintenance organizations have long embraced the concept of primary care, and have shown a strong preference for generalist physicians. In addition, HMOs are moving in the direction of increasing the scope of practice of generalist physicians, and decreasing utilization of and referrals to specialists and subspecialists.

The continued growth in managed health care may magnify the physician surplus and generalist:specialist imbalance identified in the 1992 COGME Third Report. Given the current rate of producing physicians (25,000 residents are entering the first year of training each year, equivalent to the number of 1993 US medical students graduates plus 40 percent), and of specialty output (30 percent generalists and 70 percent specialists), the patient care specialist supply is projected to increase from 140 to 150 specialists per 100,000 between the year 2000 to 2010. This compares with COGME's estimated staffing requirements of 85 to 105 specialists per 100,000 population in a managed care-dominated environment. Compared with the midpoint of the requirements range, this would translate into a projected surplus of 125,000 specialists in the year 2000 and 170,000 in the year 2010.

During the same period, the patient care generalist supply is projected to remain stable at 63 to 67 generalists per 100,000 population, compared with COGME's estimated staffing requirements of 60 to 80 generalists per 100,000. Compared with the midpoint of the requirements range, this would represent a modest shortage of 20,000 generalists in the year 2000 declining to 8,000 (or near balance) in 2010. The potential for physician underemployment or unemployment as we enter the 21st century is suggested by this and other workforce analyses, whether they assume that managed care or fee-for-service arrangements will predominate.

Finding # 3: Changes in the health care environment that have led to the growth in managed care will also have major effects on the allopathic and osteopathic medical education system and their teaching institutions; this will likely result in decreased financial support for medical education at both the undergraduate and graduate levels, which could affect the quality of these endeavors.

The growth in managed health care will influence educational institutions to make major changes in the way they deliver and finance patient care. Teaching institutions will be required to compete with other health plans and medical groups for managed care contracts. However, many teaching institutions may be hindered by their traditionally higher operating costs, predominance of specialists and orientation towards specialty care, lack of primary care infrastructure, and emphasis on teaching and research, as well as their more complicated patient mix and larger proportion of the uninsured and underinsured. The higher costs tra-

ditionally attributed to the learning needs of trainees, such as increased use of diagnostic tests and procedures and longer lengths of stay, can no longer be accepted as part of normal operating expenses in the increasingly competitive health care marketplace.

The net effect of increased competition may well be a decrease in clinical income for many teaching institutions, which has traditionally supported their medical educational components. Increased competition may also result in a decrease in the availability of other important educational resources, such as training sites, teachers, and patients. These necessary adjustments may be considered contrary to the traditional "culture" of academic medicine, which placed a high value on departmental autonomy and a decentralized decision-making structure. Teaching institutions that cannot adjust may see the quality of education at the undergraduate as well as the graduate level affected and their own survival threatened.

Finding # 4: The growth of managed care will magnify the deficiencies of the current educational system, yet will also provide new and essential educational opportunities to improve the preparation of physicians for their future roles.

In response to the needs of the changing health care environment, educational programs will have to produce a physician with a different set of skills and new areas of knowledge. The current medical educational system has been successful in training physicians for a health care system based on fee-for-service, specialty, and acute hospital care. However, changes in the content of the educational program and the sites used for clinical training will be needed to prepare physicians for effective practice in a managed care environment, with an emphasis on cost-effective, ambulatory, and primary care. Although the number of relationships are growing, relatively few educational linkages exist between academic medical centers and managed care organizations, especially with newer independent practice association (IPA) types of managed care.

Finding # 5: There are currently many barriers and few incentives by which health care and teaching institutions can address these problems regarding the physician workforce and medical education.

Currently there are few incentives for medical schools, residency programs, teaching hospitals, managed care organizations, or state or federal government to work either individually or collaboratively to address the nation's physician workforce or medical education priorities. Competition for patient care between teaching hospitals and managed care organizations, concern for who shares in the cost of medical education and ambulatory training, and conflicts between patient satisfaction and trainee needs have all created barriers against which health care delivery systems and teaching institutions must attempt to address national physician workforce and medical education goals.

Key federal policies, particularly Medicare graduate medical education (GME) financing, have produced significant disincentives toward training more generalists and fewer specialists, move training to ambulatory, community-based and managed care settings, and prepare new physicians in the requisite competencies for managed care practice. These disincentives in Medicare GME should be corrected to better prepare physicians for effective managed-care practice.

RECOMMENDATIONS:

With the rapid changes taking place in the health care environment, medical schools, residency programs, teaching hospitals and managed care organizations are encouraged to collaborate and cooperate to produce physicians with in the requisite numbers, specialty mix and competencies to meet patient needs. In addition, public funds for medical education through Medicare and the Public Health Service must be targeted prudently to provide the right incentives in the medical education marketplace.

Recommendations are the following:

Medical Schools, Residency Programs, and Teaching Facilities:

1. As medical schools, residency programs and teaching facilities restructure in order to be more competitive in patient care and at the same time preserve their academic mission, they will also need to reassess their roles and responsibilities regarding the physician workforce and medical education.
2. Medical schools, residency programs and teaching facilities should share in the responsibility to train the number and types of physicians appropriate to the nation's needs.
3. Medical schools, residency programs and teaching facilities need to evaluate their institutions and identify deficiencies that are barriers to achieving a more balanced physician workforce, and to train physicians for their future roles. These institutions should:

   a. assure that the process selects applicants who are motivated, have the qualities and abilities, and who can be educated and trained to become the physician workforce which the nation needs;

   b. assure that the curriculum educates students for their future role, including the "new basic sciences" of population-based medicine, epidemiology, and decision analysis; and

c. assure that the clinical curriculum provides an adequate education in ambulatory and managed care settings, preventive care, team care, and cost-effective patient care.

4. The size, composition and competencies of the full-time faculty at medical schools and residency programs must be reviewed in order to assure that they are appropriate to train physicians for their future roles.

5. Residency programs need to train residents in managed care environments, to review and revise existing residency curricula to ensure that the knowledge, skills and attitudes necessary for future physicians are included, and to adequately prepare both their primary care and specialty graduates for the scope of practice, coordinated relationships, and referral patterns found in managed care organizations.

6. Additional training programs should be developed to meet the needs of the future health care delivery system, e.g. programs for retraining specialist physicians as generalist physicians; and fellowship training to develop physician leadership in managed care environments.

7. Medical schools, residency programs and teaching hospitals need to identify and review their teaching costs, and make their educational programs more efficient.

8. Evaluation at the medical school, residency and continuing medical education levels should incorporate the knowledge, skills and attitudes that will be needed by future physicians, and should be reviewed as medical education and training becomes more decentralized.

9. External certifying and accrediting organizations (e.g. the National Board of Medical Examiners, the National Board of Osteopathic Medical Examiners, the Accreditation Council for Graduate Medical Education, the American Osteopathic Association-Bureau of Professional Education, the Liaison Committee on Medical Education, the Residency Review Committees) need to address the new elements in health care delivery and reassess their structure, policies, and procedures in light of the findings in this report.

10. Medical schools and residency programs (in cooperation with the government and managed care organizations) need to develop an infrastructure in primary care research, and to conduct and support primary care research.

Managed Care Organizations:

1. Managed care organizations need to identify and define their needs as to the number, types and competencies of physicians, and should communicate this information and provide feedback to medical schools and residency programs.

2. Managed care organizations need to work cooperatively and collaboratively with medical schools and residency programs in developing programs to address the physician workforce and medical education.

3. Managed care organizations (and all other third-party payers) need to share in the cost of paying for medical education, through an all-payer fund, and by developing mechanisms to support and encourage training and evaluation of medical students and residents in their sites. This could include:
   - bonus payments for teaching
   - sponsoring preceptorships and clerkships
   - residency programs in managed care environments or sharing sponsorship of a residency
   - teaching residents about practice management issues
   - collecting data regarding educational and training needs
   - collaborative health services research
   - collaborative development of standards of care
   - developing managed care leadership programs
   - innovative approaches and models of medical education.

4. Managed care organizations should work with external certifying and accrediting organizations to help address the issues identified in this report.

Government:

1. Continue to pay Medicare DME and IME for all residents who are graduates of US medical schools, but gradually reduce DME and IME for international medical graduate residents to 25 percent of the 1995 levels. Establish a transition program to assist institutions providing essential services which are dependent on IMG residents.

2. Upweight both DME and IME to encourage more generalist training and downweight DME and IME to discourage specialist training.

3. Provide both DME and IME payments for teaching in non-hospital settings, including physician offices, community health centers and managed care practices. Funding should follow the resident to his or her site of training.

4. Identify and remove the DME and IME components of the Average Adjusted Per Capita Cost (AAPCC) from Medicare capitation rates and utilize these funds specifically for GME purposes.

5. Create demonstration projects to foster the growth of consortia to manage medical education policy and financing.
6. Reauthorize, at 1995 pre-recision appropriated levels, the National Health Service Corps, Title VII (Health Professions Education), and primary care research funding.
7. Reauthorize the Council on Graduate Medical Education (COGME) to monitor the physician workforce and medical education system given the rapidly changing health care marketplace.
8. The federal government should play a major role in the collection and analysis of data regarding the physician workforce and medical education. This should include current data on staffing patterns in specific organizational forms of managed care (e.g., independent practice associations), information on the cost of medical education (medical students and residents) in ambulatory and managed care settings, and on the differences in the cost of training generalist and non-generalist physicians.

II. Growth of Managed Health Care

Managed health care has been defined as any organized, systematic intervention that can favorably affect the quality (e.g., technical quality, patient's health status, patient's satisfaction, provider's satisfaction) or cost of health care by linking purchasers, insurers, and providers (Moore, 1993; EBRI, 1994; Miller and Luft, 1994). Because this definition includes a variety of approaches, wherever possible this report refers to specific organizational forms of managed care such as staff or group model health maintenance organizations (staff or group HMOs), managed indemnity plans (MIPs), preferred-provider organizations (PPOs), independent practice associations (IPAs), networks and point-of-service (POS) plans, as outlined in Tables 1 and 2.

When the acronym HMO (health maintenance organization) is used without further qualification it refers to the broad family of integrated health systems that combine the delivery of health care and its financing on a prepaid basis. This definition of HMOs includes staff and group model HMOs, as well as networks and IPAs, but excludes PPOs.

Table 1 Definitions of Six Representatives Organizational Forms of Health Care Delivery*

Intensity of Managed Care	Organizational Form	Definition
Least Managed	Indemnity Plan with Fee-for-Service (FFS)	Complete freedom of choice to patients. Insurer reimburses physicians on a fee-for service basis.
	Managed Indemnity Plan (MIP)	Free choice and FFS, but insurer exercises some degree of utilization control to manage costs.
	Preferred Provider Organization (PPO)	Insurer channels patients to "preferred" physicians who are usually paid discounted FFS. The insurer, not the physician, usually accepts financial risk for performance.
	Independent Practice Association (IPA)	Insurer channels patients to physicians usually solo or in small groups who have agreed to some financial risk for performance. Payment may be either capitation of FFS with financial incentives based on performance.
	Network IPA	Similar to IPA but consists of a network of larger group practices. Payment is usually capitation to each group, which then pays the physicians.
Most Managed	Staff/Group Health Maintenance Organization (HMO)	The classic, prepaid, large multispecialty, group practice. Patients are covered only for care delivered by the HMO. The doctors are usually salaried and work either for the plan (staff model HMO), or for a physician group practice (group model HMO) which has an exclusive contract with the plan.

* Adapted from Moore, 1993. Not shown are hybrid arrangements such as open-ended and point-of-service (POS) arrangements whereby patients in a PPO, IPA, Network or Staff/Group HMO may have some insurance coverage for care outside of the providers approved by the insurer.

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Table 2 Management Incentives and Influences on Medical Practice of Six Representative Organizational Forms of Health Care Delivery *

Intensity of Managed Care	Organizational Form	Management Incentive	Influence on Medical Practice
Least Managed	FFS	None	None
	MIP	Utilization reviews	External regulation
	PPO	Utilization reviews and discounted fees	External regulation
	IPA	Financial risk in addition to utilization review	Physicians accepts financial risk for performance
	Network IPA	Group, business and social structures, in addition to financial risk and utilization review	Indirect: management personal, and cultural Direct: coordination, systems and structural design
Most Managed	Staff/Group HMO	Integrated multispecialty physician group and support services; usually in purpose built health center	

* Adapted from Moore, 1993.

01/12/95

When the acronym HMO (health maintenance organization) is used without further qualification it refers to the broad family of integrated health systems that combine the delivery of health care and its financing on a prepaid basis. This definition of HMOs includes staff and group model HMOs, as well as networks and IPAs, but excludes PPOs.

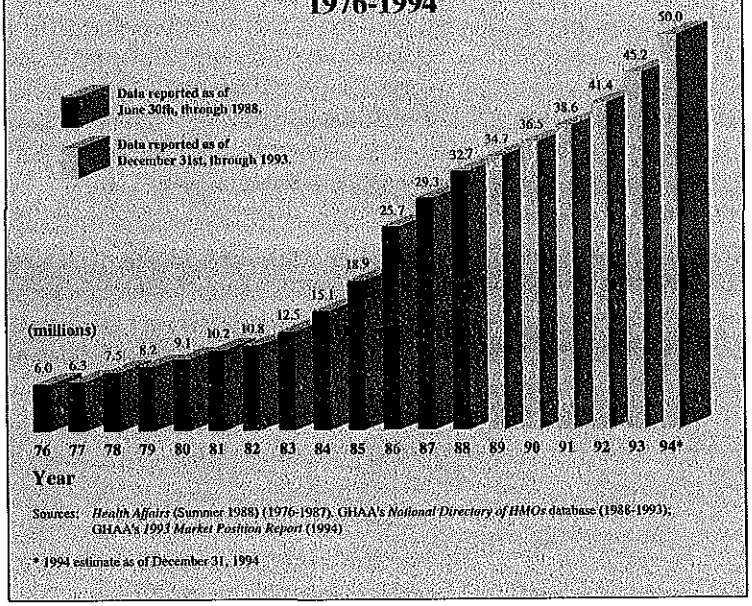
Finding # 1: Managed care has been growing rapidly in both the private and public sectors, and in most geographic areas, and this growth is likely to continue or accelerate in the future.

National Trends

Combined total enrollment in HMOs more than tripled in the past decade (Figure 1), reaching approximately 50 million enrollees at the end of 1994 (GHAA Market Position Report, 1994), and is expected to reach 56 million in 1995 (AM News, Dec. 26, 1994). Approximately half the patients in HMOs are enrolled in IPAs and about one-fourth (24.1 percent) in group-model HMOs. About one-sixth (17.5 percent) are in networks and only about one-tenth (11.4 percent) are enrolled in staff-model HMOs.

Point-of-service (POS) plans, which are also referred to as types of hybrid, mixed-model or open-ended plans, as well as preferred provider organizations (PPOs) have recently emerged as attractive alternatives. Between 1987 and 1992, the number of individuals enrolled in PPOs more than quadrupled from 12.2 million to 58 million. Enrollment in POS plans grew during the same time period from virtually none to 2.3 million. While slightly less than half the U.S. population with private insurance still remains in FFS plans, virtually all (approximately 95 percent) of these plans now include some sort of utilization review (EBRI, 1994; Iglehart, Nov. 1994) in which doctors and patients must seek approval for some treatments. While some physicians still remain uncomfortable with the tenets of managed care (Iglehart, 1994), nearly three-fourths of physicians recently reported having at least one managed care contract (AM News, Nov., 1994). Furthermore, recent (1993) data from the Socioeconomic Monitoring System of the American Medical Association indicate that nearly two-thirds of

Figure 1
Number of People Receiving Their Care In An HMO, 1976-1994



physicians are involved in PPOs and almost half reported being involved in HMOs (Table 3).

Geographic Variation

Market penetration, defined as the percentage of the local population enrolled in managed care plans, varies widely throughout the country as does the rate of growth of enrollment within particular areas. California led the nation in HMO market penetration at the end of 1993 with approximately 11 million enrollees representing 35 percent of the state's total population. Although a similar rate of penetration is observed in Massachusetts at 34.1 percent, the total enrollment is approximately 2 million (GHAA National Directory of HMOs, 1994). Over 2 million patients were enrolled both in Florida and Pennsylvania, but these represent less than one-fifth of the total population of each state. High rates (over 25 percent) of market penetration are found in the less populated states of Arizona, Oregon, Rhode Island, and the District of Columbia.

In 1993, a region defined as Alabama, Kentucky, Mississippi and Tennessee showed the most rapid growth beginning from a low rate of penetration in the previous year. The western region defined as California, Oregon, Washington, and Hawaii showed the next-most rapid rate of growth even though penetration was already high. HMO enrollment in 1993 was zero in Alaska, West Virginia, and Wyoming, which is not uncommon in rural areas at the present time (AM News, Oct. 10, 1994). Table 4 presents recent data on the geographic distribution of HMO enrollees.

There is substantial variation in market penetration by HMOs when comparisons are made among particular urban market areas (Gold, 1991). In 1989 over 40 percent of the population was enrolled in HMOs in each of the two metropolitan statistical areas of San Francisco-Oakland-San Jose-Sacramento, and Minneapolis-St. Paul. At the other extreme, in New York-Northern New Jersey-Long Island-Connecticut only 11 percent were enrolled in HMOs at that time (Gold, 1991). Later data for more narrowly-defined geographic areas compiled in 1991 showed an eight-fold difference ranging from a low of 7 percent for Charlotte-Gastonia-Rock Hill, North Carolina, to a high in Rochester, New York where 54 percent of the population was enrolled in HMOs (GHAA National Directory of HMOs, 1994).

Concern has been expressed about the degree to which managed care will be able to address the health care delivery requirements of rural populations (Kronick et al., 1993). Weiner (1991) estimated rural enrollment in HMOs to be about half that of national rates. However, there are exceptions. Several HMOs, including the Geisinger Health Plan in rural northeastern Pennsylvania, serve predominantly rural areas. Geisinger's more than 150,000 members reside in 31 rural counties (GHAA Davis IOM, Dec., 1994). Forty-five primary care clinics staffed by 500 salaried physicians serve Geisinger's patients. The Geisinger HMO also contracts with other rural primary care clinics, approximately 450 private practice physicians, numerous community hospitals, and the Geisinger Medical Center, a teaching hospital affiliated with the Jefferson Medical College.

As another example of an HMO serving rural needs, one urban-based HMO, the Community Health Plan of New York, claims to have in actuality the largest rural enrollment of any managed care plan. Its service area covers approximately one-third of upstate New York, all of Vermont, and the three western-most counties of Massachusetts, covering in total about 31,000 square miles and about 3 million people. As of November 1994, its enrollment numbered 345,000. Its 38 staffed health centers employ about 300 physicians, two-thirds of which are in primary care. Its recent expansion, however, has been in the area of contracting with affiliated or "point-of-service" staff, containing 3260 physicians, of which only one-third are in primary care (Rural Health Research Program Directors' Meeting, November 1994).

A third example of a successful HMO serving rural needs is Itasca Medical Care (IMCare). It is a prepaid Medicaid managed care program serving the health needs of 4000 enrollees receiving public assistance within Minnesota's Itasca County. It began in

Table 3 Percent of Physicians Contracting with Health Maintenance Organizations (HMOs), Individual Practice Arrangements (IPAs) and Preferred Provider Organizations (PPOs), 1993

	Number of Responses	HMO Mean	Number of Responses	IRA Mean	Number of Responses	PRO Mean
All Physicians	3888	47.7	3824.0	26.0	3907.0	64.5
Specialty						
General/Family Practice	497	40.6	494.0	21.4	497.0	59.0
Internal Medicine	751	50.8	743.0	27.2	754.0	67.0
• General Internal Medicine	488	49.9	487.0	26.0	488.0	64.9
• Cardiovascular Diseases	121	51.6	117.0	30.0	125.0	69.5
• Other	142	53.6	139.0	29.7	141.0	73.2
Surgery	857	52.0	845.0	31.6	857.0	71.3
• General Surgery	230	51.6	225.0	35.2	228.0	70.6
• Otolaryngology	89	51.4	86.0	26.2	89.0	71.0
• Orthopedic Surgery	175	48.5	172.0	27.1	176.0	71.7
• Ophthamology	165	52.9	164.0	30.3	164.0	65.3
• Urological Surgery	88	54.3	90.0	41.4	90.0	83.9
• Other	110	55.6	108.0	28.6	110.0	71.3
Pediatrics	292	51.8	291.0	28.0	297.0	68.5
Obstetrics/Gynecology	275	59.0	273.0	30.5	279.0	73.0
Radiology	270	62.6	255.0	33.7	270.0	70.0
Psychiatry	236	23.1	236.0	10.9	238.0	44.9
Anesthesiology	221	54.8	210.0	28.7	223.0	67.9
Pathology	129	45.2	128.0	19.5	137.0	60.8
Other Specialty	360	36.4	349.0	20.5	355.0	52.5
• Emergency Medicine	156	29.9	152.0	11.4	152.0	40.4
• Other	204	41.8	197.0	27.9	203.0	62.1
Geographic Area						
New England	236	63.0	227.0	46.0	231.0	63.1
Massachusetts	106	73.0	101.0	48.4	104.0	77.7
Other	130	54.7	126.0	44.1	127.0	50.9
Middle Atlantic	659	43.7	646.0	19.9	655.0	45.5
New Jersey	132	53.8	128.0	32.3	131.0	47.7
New York	318	32.0	307.0	18.8	312.0	38.6
Pennsylvania	209	58.1	211.0	13.1	212.0	56.6
East North Central	591	53.9	578.0	24.0	593.0	70.1
Illinois	179	51.9	177.0	34.5	183.0	71.2
Michigan	108	66.6	101.0	13.4	104.0	65.7
Ohio	151	50.9	149.0	21.8	152.0	68.1
Other	153	50.2	151.0	21.8	154.0	73.8
West North Central	271	52.1	263.0	22.1	272.0	68.7
South Atlantic	699	43.3	683.0	20.1	703.0	66.9
Florida	191	50.9	187.0	13.4	191.0	75.7
Other	508	40.4	496.0	22.6	512.0	63.6
East South Central	218	31.8	223.0	16.1	225.0	68.5
West South Central	398	40.7	394.0	14.5	402.0	65.2
Texas	269	44.3	263.0	16.2	269.0	66.3
Other	129	32.7	131.0	11.0	133.0	62.6
Mountain	180	56.2	180.0	29.5	187.0	69.7
Pacific	636	50.8	630.0	44.0	639.0	72.7
California	475	50.1	469.0	50.9	478.0	73.3
Other	161	52.7	161.0	24.0	161.0	70.8
Practice Arrangement						
Self-Employed	2635	46.4	2623.0	29.1	2657.0	67.2
Solo Practice	1272	39.3	1268.0	23.5	1275.0	60.9
Two Physician Practice	313	47.8	313.0	36.0	314.0	74.1
Three Physician Practice	249	49.1	249.0	35.4	252.0	69.0
4-8 Physician Practice	501	53.1	503.0	36.4	512.0	74.8
Over 8 Physician Practice	298	67.2	288.0	31.9	302.0	76.7
Employee	1067	53.3	1021.0	19.4	1061.0	60.4
Independent Contractor	186	33.6	180.0	21.2	189.0	50.6

Source: 1993 Socioeconomic Monitoring System core survey. Sources are not reported if the number of responses is less than 25.

Table 4 Number of HMO Plans, Enrollees, and Percentages by Plan Characteristic, Year-End 1993

	No. of Plans	% of Plans	No. Enrollees	% Enrollees
ALL PLANS	545	100.0	45,205,347	100.0
PRIMARY MODEL TYPE				
Staff	57	10.5	5,133,588	11.4
Group	55	10.1	10,892,237	24.1
Network	94	17.2	7,912,121	17.5
IPA	339	62.2	21,267,401	47.0
REGION				
New England	39	7.2	3,405,727	7.5
Middle Atlantic	62	11.4	7,265,561	16.1
South Atlantic	92	16.9	5,864,300	13.0
East North Central	111	20.4	6,659,268	14.7
West North Central	47	8.6	2,740,286	6.1
South Central	73	13.4	3,227,401	7.1
Mountain	55	10.1	2,938,293	6.5
Pacific	66	12.1	13,104,511	29.0

Source: GHAA's National Directory of HMOs database

the early 1980's with several important goals: 1) to enhance reimbursement levels of publicly funded health care programs, 2) to slow the rapid growth of public funds with the cooperation of private enterprise, 3) to ensure access to health care for medically needy, 4) to provide quality and medically necessary care, and 5) to control utilization of medical services through cooperative efforts of the public, medical providers, and the patients. Its provider network is built on 28 primary care physicians in four clinics and eight referral specialty physicians (IMCare Director, October 1994).

While these and other examples of successful HMOs serving rural needs can be found, a recent study concluded that access to HMO services in rural areas decrease as county population density lessens, and adjacency to metropolitan area is an important predictor of inclusion in a service area (Ricketts, Slifkin, Johnson-Webb, 1995).

Private Employers

The national and regional trends mask the even more dramatic changes in health benefits purchasing decisions of large private employers. Responding to the increasing cost of employee benefits, large firms employing 200 or more have been among the most significant catalysts behind the rapid growth of managed care. Managed care plans have gained prominence because many private payers regard them as the best way to restrict the growth of health care expenditures (Iglehart, 1994). For better or for worse, employers are now selecting health plans largely on the basis of cost, because they contend that there is little information available on differences in quality (AM News, July 25, 1994). While the overall relationship between cost and quality in health care remains unclear (Starfield, 1994), groups such as the National Council on Quality Assurance (NCQA), which accredits HMOs, are taking the lead in documenting the quality of managed care.

The proportion of large firms' employees enrolled in HMO, PPO, and POS plans grew from 47 to 65 percent in just three years between 1991 and 1994. In 1994 only 6 percent of these firms' employees were still covered by indemnity plans that provided health insurance coverage without requiring precertification of benefits. While this movement away from traditional indemnity plans that allowed patients and their physicians to make independent choices largely reflects the decisions of employers as the purchasers of health insurance rather than the preferences of individual patients (Kassirer, Oct. 1994), reports indicate a high level of patient satisfaction with the change. Almost half of all large employers now offer their employees only one health plan. Employers view their ability to control their employees' "choice of health

plan as a key issue in the restructuring of health services delivery today" (*Health Benefits in 1994*. KPMG Peat Marwick, Oct. 1994). While earlier reports left unanswered the question of whether employers would be able to reduce their health care costs through managed care (GAO, Oct., 1993), it now appears that large employers prefer to limit the range of their employees' health care options as a means of continuing to provide access to high-quality care while also controlling cost.

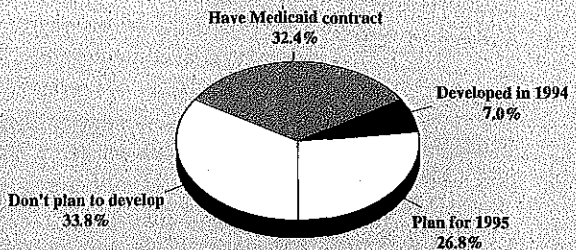
Federal Employees

The proportion of approximately 2.3 million federal employees covered by prepaid health care plans increased from 18 percent in 1984 to 39 percent at the end of 1993. The rate of change to prepaid health plans was similar among 1.7 million federal retirees, but increased from a smaller base of only 8 percent covered by prepaid health plans in 1984 to 15 percent in 1993 (FEHBP, Sept., 1994).

Medicaid

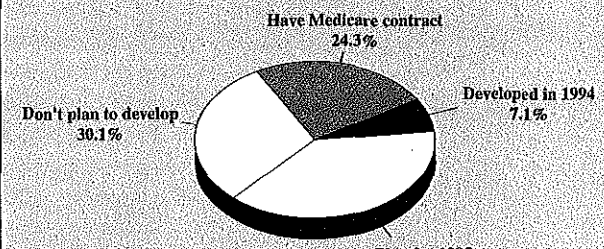
Federal and state spending on Medicaid rose 9.2 percent in 1993, following even higher increases of 15 percent in 1992 and almost 25 percent in 1991 (NYT, Nov. 27, 1994). As one response to the continuing high cost of providing health care to Medicaid beneficiaries, most states have been following the lead of private employers by rapidly developing or expanding their managed care programs (AM News, Dec. 19, 1994:11). From 1987 to 1992, states' total enrollment of Medicaid beneficiaries into managed care programs more than doubled, and included 3.6 million beneficiaries (about 12 percent of the total Medicaid population). In 1992, two-thirds of the states had managed care programs for Medicaid enrollees and nearly all states were expected to have programs in place by the end of 1994 (GAO, March, 1993). According to the Group Health Association of America (GHAA), 7 percent of HMOs surveyed developed new plans for Medicaid recipients in 1994, and one-quarter reported that they intended to do so in 1995 (Figure 2)

Figure 2
More HMOs Plan to Serve Medicaid Patients



Source: GHAA HMO Performance Survey, 1994

Figure 3
More HMOs Plan to Serve Medicare Risk and HCPP Patients



Source: GHAA HMO Performance Survey, 1994

According to the United States General Accounting Office (GAO), a common feature of managed care models in the Medicaid program is the role of a physician who takes responsibility for each patient's primary care, including controlling and coordinating all the patient's health services (GAO, March, 1993). Some states are using capitated models, while others use an approach referred to as "primary care case management" (PCCM). Under PCCM a physician receives a per capita case management fee to coordinate a patient's care, then receives additional reimbursement for specific services provided (GAO, March, 1993).

According to the GAO, it is not yet clear whether these programs actually save money (GAO, March, 1993). Nevertheless, the states with capitated programs report as an important benefit that their total Medicaid costs are becoming more predictable because of the fixed nature of capitation payments. Capitation therefore enables the states to establish a fixed budget for health care. The current expectations of state governments are high. A spokesman for the state of Tennessee, which recently moved all of its Medicaid enrollees into managed care, reported that "Enough money has been saved to extend coverage to an estimated 400,000 Tennesseans who lacked health insurance before, but were not poor enough to qualify..." (Newsweek, Dec. 5, 1994).

Medicare

Since the early 1980s the Health Care Financing Administration (HCFA) has been encouraging HMOs to offer Medicare coverage to enrolled beneficiaries for fixed prepaid premiums. As of June 1992, approximately 1.4 million (3.9 percent) of the estimated 35.5 million Medicare beneficiaries in the U.S. were enrolled in 83 active Medicare risk plans (Brown et al.,

1993). This share rose to approximately 5.7 percent in December 1994, with growth currently projected to be approaching 7 percent of the population eligible for Medicare in 1995 (NYT, Jan. 11, 1995). Enrollment is growing at an annual rate of 12 percent and more than two-thirds of HMOs either provide care to Medicare patients or plan to develop a program (Figure 3).

The results of these programs have been difficult to evaluate. Some early evidence suggested that healthy beneficiaries were more likely to enroll in these HMOs (Brown et al., 1993). Patients with chronic health problems were less likely to enroll, but the capitation payment based on Average Adjusted Per Capita Cost (AAPCC) rates failed to anticipate fully this favorable selection bias. HCFA initially proposed that HMOs be paid 95 percent of the projected FFS costs for enrollees in discrete geographic areas. However, the actual cost of caring for the enrollees in HMOs was only 89 percent of the projected FFS cost, producing a gain for some HMOs and their patients, and a corresponding loss for HCFA (Brown et al., 1993).

An important finding of this Medicare risk contract experiment is that both HMOs and FFS providers delivered care of comparable technical quality. The reports from the patients themselves were also positive. Although the proportion of HMO enrollees who gave excellent ratings to the quality, access, and personal attention of their care was slightly lower than those in FFS, the HMO enrollees were much more satisfied with the cost of their care, than were the beneficiaries in FFS. Most importantly, 14 out of 15 of the Medicare enrollees in HMOs reported that they would recommend their plan to a friend or family member (Brown et al., 1993).

Quality

In January 1994, the NCQA launched a one-year Report Card Pilot Project in collaboration with 21 health plans and key employer, consumer, health policy and labor representatives. NCQA created this project to test the feasibility of implementing a system of standardized performance measures that could provide timely information to purchasers, consumers, health plan executives, and others regarding the quality of care and service in managed care plans. The project determined that performance measures that are rigorously produced, audited and displayed in common format provide useful information on health care performance (NCQA 1994 Report Card Pilot Project/Technical Report). Table 5 displays the measures used to evaluate the performance of the participating plans.

A recent HMO industry-wide survey indicates that a majority of managed care plans provide consumer-based health management strategies that focus on the improvement of individual and population health status, and support personal health decisions that enable appropriate use of medical services. Research studies of these demand management strategies over the last 12 years have demonstrated significant reductions in employee sick time, absenteeism, outpatient utilization and costs, and even inpatient costs (Otis and Harmon, 1995).

A comprehensive review of the literature published from 1980 to 1994 analyzed the findings of 16 studies comparing the quality of health care provided in HMOs with care provided to similar populations in other settings. The study determined that the quality of care in HMOs was better than or equal to the care delivered in fee-for-service (FFS) plans on 14 of 17 measures. The study found that people cared for in HMOs consistently received more preventive care, such as breast, pelvic, rectal and general physical examinations, than people in FFS plans. HMO members also received more health promotion counseling than members of FFS plans (Clement et al., 1994). As more managed care organizations become more involved providing care to senior under Medicare risk contracts, the quality of care can be more carefully examined. The findings of similar high quality in Medicare HMOs are consistent with other studies of HMO quality.

What is being referred to as the quality care movement in managed health care can also be viewed as a manifestation of a broader set of fundamental changes taking place in the health care system (NYT,

Table 5 National Committee for Quality Assurance (NCQA) Quality Measures

Member Satisfaction With Care Received
- Overall evaluation of plan
- Access to medical care
- Thoroughness of examinations
- Ease of seeing physician of choice
- Personal interest in you and your medical problems
- Satisfaction with outcomes of medical care
- Would recommend plan to others
- Intent to switch plan

Quality of Physician Network
- Physician turnover rates
- Board certification rates for:
  - primary care physicians
  - specialists

Membership and Financial Stability
- Member disenrollment rate
- Medical loss (expenses to premium) ratio
- Administrative loss (expenses to premium) ratio
- Revenue requirements per member per month (pm/pm)
- Revenue requirements (pm/pm) per:
  - Employee
  - Employee/spouse
  - Employee/children
  - Family

Utilization Rates Per Enrollees
- Coronary bypass
- Angioplasty
- Cardiac catheterization
- Cholecystectomy
- Hysterectomy
- Prostatectomy
- Laminectomy
- Cesarean section
- Readmission for chemical dependency
- Obstetrical hospital stay
- Hospital days

Quality of Care (rates per enrollees)
- Childhood immunizations
- Cholesterol screening
- Mammograms
- Pap Smears
- First trimester prenatal care
- Regular diabetic retinal examinations
- Post-discharge follow-up after major affective disorders
- Asthma hospital admissions

Access to Care
- Percentage of members who visited a health plan practitioner within the last 3 years

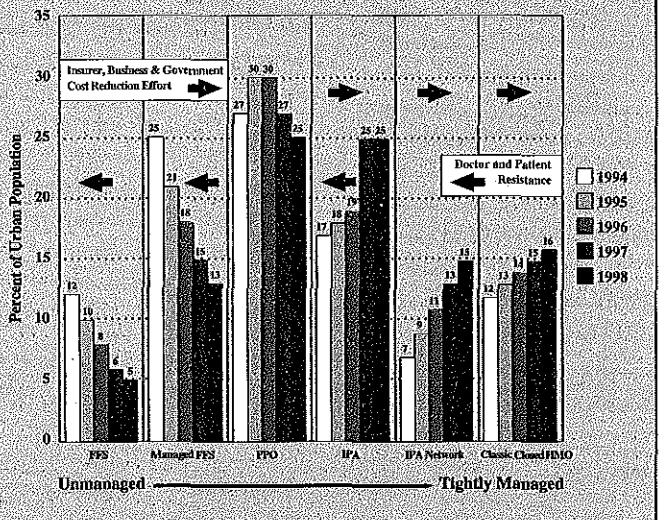
Source: The "Report Card Pilot Project". National Committee for Quality Assurance. Washington DC: NCQA; 1994.

Dec. 18, 1994), namely a transformation and industrialization of health care as described by Starr (Starr, 1982). Although there are many variations on the motif of managed care, each involves changes in the delivery and the financing of health care. These changes are developed to enhance the quality of care, while assuring that it is cost-effective.

Development of Integrated Delivery Systems: Employers and public insurers are gradually moving some of the decentralized control over the delivery of health care away from solo physician practitioners, so that often this control is concentrated in large networks that integrate the delivery of health services.

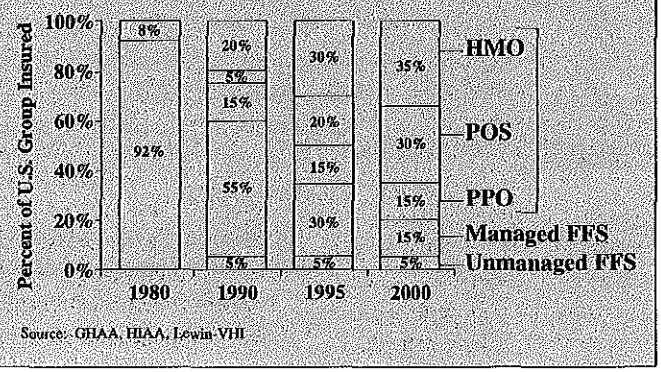
While there has been substantial geographic variation in the growth and market penetration of managed care, projections indicate that the overall trend (Figure 4) is irreversible (Figure 5). The five largest managed care firms (Blue Cross/Blue Shield, Kaiser, Prudential, United Healthcare and U.S. Healthcare) controlled 42 percent of the HMO business in 1994, and growth in enrollment continues to be most rapid in the large HMOs (AM News, Oct. 10, 1994). The total number of HMOs is declining, and the number of plans is expected to shrink further as the market increases. A recent newspaper report describes a billion-dollar bidding war among firms seeking to acquire one of the biggest publicly held HMOs in the West (NYT, Dec. 31, 1994). Light (1994) predicted the evolution of oligopolies similar to other large industries in the U.S. in which only a handful of large organizations will eventually dominate the health care market.

Figure 4
Forces and Net Effect on Market Share of Urban Health Care Plans 1994-1998



Source: Moore, 1993

Figure 5
Network-Based Forms of Managed Care Will Dominate By 2000

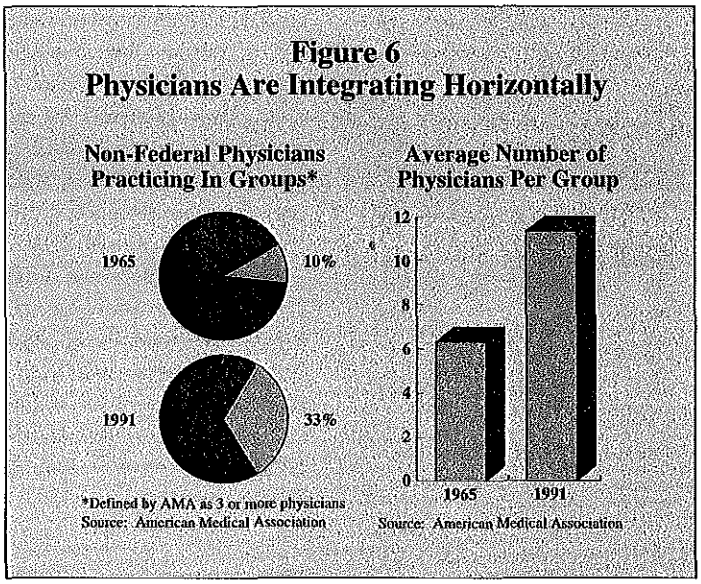


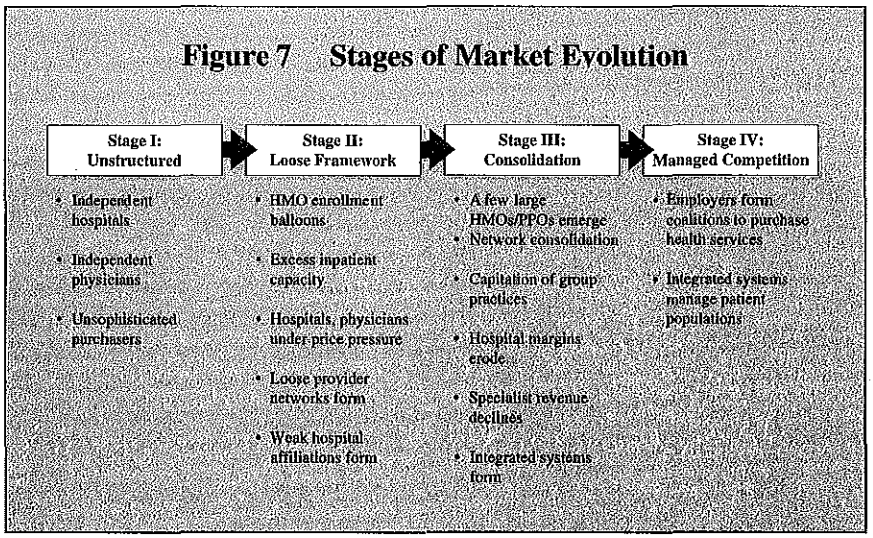
Source: GHAA, HIAA, Lewin-VHI

In response to the growth of managed care, physicians increasingly are consolidating their practices and coming together in systems of practice that are more highly organized (Figure 6). The number of physicians in group practice grew from only 28,381 in 1965 to 184,358 in 1991 (AM News, Nov. 28, 1994). According to the same report, approximately one-third of physicians in 1991 were identified as employees. Information systems are playing a large role. The practice of medicine is changing in this way not simply because of economic imperatives, but because the technological and social demands on medicine have become too complex to be achieved except within collaborative frameworks. As a result, volume of service is shifting from being physician directed to being system directed. One consequence is that the implied guarantee of full employment that physicians have had through their ability to control volume of service is being lost. Another is that all physicians are developing practice styles that are more collaborative and cost-effective. (Cooper, 1994)

The development of integrated delivery systems are having a dramatic impact on physician practice as well as the structure and viability of hospitals and academic medical centers. Referrals to some academic medical centers have already begun to decline as physicians outside the teaching hospitals are choosing to treat more complicated cases in their own facilities (Iglehart, Nov., 1994). While this is due in part to the proliferation of specialists and ready availability of technology, it is also affected by capitation.

The Movement Towards Capitation and Assumption of Risk: The most highly developed managed care organizations rely heavily on capitation arrangements in which providers are paid based on a total number of patients under their care, referred to as "covered lives." These contracts provide a mechanism





for private and government payers to negotiate budgets for their total health care expenditures for a defined population during a fixed period of time. Under managed care, the organizations providing health care have a strong incentive to control the number and cost of services they provide because the fixed premiums amount to a budget (Iglehart, 1992, and Nov., 1994). The presence of a budget changes the behavior of the organization because the services of a provider that under a FFS system had been revenue centers suddenly become cost centers; i.e., the income of the provider is determined by the total number of covered lives enrolled rather than the actual services delivered to patients (AM News, Oct. 24, 1994:24). As a result, organizations begin to monitor expenditures systematically by scrutinizing the cost-effectiveness of many areas of clinical practice. One representative example is that the questioning of decisions by orthopedic surgeons to use high-quality implants in elderly patients instead of less expensive devices with shorter life spans (NYT, Nov. 23, 1994).

Most managed care organizations recognize the complexity of the decisions faced by physicians and other providers (AM News, April 11, 1994:4), and have provided leadership in measuring the quality of health care (NYT, March 31, 1994). Many have devised innovative information systems and compensation methods tied to objective measures of access, technical quality, patient satisfaction, and cost-effectiveness (Schlackman, 1993).

Future Trends

Although managed health care is experiencing variable growth throughout the United States, its evolution appears inexorable. Some observers have identified and categorized differential "stages" of managed care growth and penetration that are experienced across geographic areas (Figure 7 and Table 6). These stages provide useful insight into the changes that cities and regions can expect as managed health care delivery and financing systems mature.

The volume of health care being financed and delivered under managed care arrangements has been growing at a steady rate across geographic areas in both the public and private sectors (Hoy et al., 1991). The following predictions were made by Moore in his report to COGME in 1993:

> The future promises more pressures from government and business to improve the quality and cost-effectiveness of American medical care. In our current political and economic environment, "managed care" appears to be the approach most likely to be employed to achieve this desired level of performance. As a general rule, the best managed systems, utilizing the most effective management tools and securing the greatest cooperation of clinicians, will be the most likely to succeed. However, many doctors and hospitals, the targets of such pressures, are likely to resist this change as long as possible.
>
> The creative tension reflected purchaser pressure for improvement and provider resistance to change will impact on the characteristics and ultimately the growth potential of the different types of "managed care plans" outlined earlier. The plans, as outlined (Tables 1 and 2), employ an intensifying mix of management tools and doctor involvement in health plan performance. The continued demands of purchasers for performance create a "gradient" towards increasingly "managed" care and stimulates the growth of managed care. But doctors usually will abandon the insurance and delivery model that preserves their greatest auton-

Table 6 The Five Stages of Managed Care

Stage 1: Can't Spell HMO	Stage 2: Managed Care Emerges	Stage 3: Managed Care Penetration	Stage 4: Managed Competition	Stage 5: Post-Reform
• *Examples:* Pittsburgh, Little Rock, Savannah, GA • *HMO Enrollment:* < 10% of population • *Physician Income/Behavior:* (1) Traditional indemnity constitutes 60-70% of physician income (2) Community's best physicians toss HMO agreements in the trash can because their waiting rooms are full of nondiscounted patients • *Employer Activity:* Employer coalitions are primitive or nonexistent • *Hospital Procedures Done on Outpatient Basis:* < 15%	• *Examples:* Dallas, Philadelphia, St. Louis, MO • *HMO Enrollment:* 10-15% of population • *Physician Income/Behavior:* Many physicians retrieve their HMO contracts from the garbage • *Employer Activity:* Big local employers form health care purchasing coalitions • *Market Changes:* Recognition of managed care's inevitability spawns formation of physician-hospital organizations, primary care-based medical groups, and regional preferred hospital networks • *Hospital Procedures Done on Outpatient Basis:* < 20%	• *Examples:* Baltimore, Chicago, Kansas City, Boston, MA • *HMO Enrollment:* 15-25% of population • *Physician Income/Behavior:* Primary care physicians are capitated, but not specialists or hospitals • *Employer Activity:* Employers demand data on costs and quality and use this information to selectively contract with hospitals • *Market Changes:* (1) Hospitals face 15-25% drop in patient days and revenue within a 3-year period. A chaotic period of active networking and shifting alliances among hospitals. (2) Insurance companies, HMOs, and hospitals compete to purchase physician groups. (3) Single-specialty groups, recognizing their vulnerability, link to primary care groups. • *Hospital Procedures Done on Outpatient Basis:* <35%	• *Examples:* San Diego, Los Angeles, Seattle, Sacramento, CA • *HMO Enrollment:* 25-40% of population • *Physician Income/Behavior:* Specialists and hospitals are capitated • *Market Changes:* (1) Regional hospital networks consolidate redundant services, close inpatient beds, and shed from their provider panels those physicians with subpar performance. (2) Managed competition between regional integrated physician-hospital networks picks up. • *Hospital Procedures Done on Outpatient Basis:* >40%	• *Examples:* Minneapolis/St. Paul, Albuquerque, NM • *Employer Activity:* Employer coalitions attempt to purchase on the basis of quality • *Market Changes:* (1) Provider networks merge with HMOs or insurance companies to form truly integrated delivery systems engaging in survivable competition. (2) Competition sharpens between for-profit and not-for-profit HMOs. (3) All high-tech services are regionalized. • *Hospital Procedures Done on Outpatient Basis:* >50%

Source: Futurist Russell C. Coile, Jr., President of the Health Forecasting Group, Santa Clarita, California, cited in Jancin, Bruce. "Experiment Gone Wrong: Execs Want to Avoid 'Another San Diego'." *Internal Medicine News*, June 15, 1995, page 27.

omy only when forced to do so by that model's relatively poor performance. Thus, the least restrictive model — full choice indemnity plans with fee-for-service (FFS) reimbursement — has been giving way sequentially to MIPs and PPOs. Further performance pressure has led insurers to offer, and doctors to join, IPA models in which they assume greater risk for performance.

In the short run (over 5-10 years), the IPA model is most likely to be the beneficiary of a reformed managed care system. Preferred provider organizations have few external controls and little involvement of physicians in the processes of care and in overall clinical outcomes. With their greater incentives for doctors to manage processes of care — referrals, test and procedure ordering, emergency room, and hospital use — IPAs should outpace PPOs and MIPs in cost-effectiveness. They are more attractive to consumers than the staff or group model HMO because they offer wider choice of doctor and more locations of care. They enjoy low fixed costs and an elastic doctor population, whereas staff or group model HMOs must recruit doctors and finance the acquisition of buildings to serve their members. In summary, the cost structure of IPA models is likely to be less expensive and more flexible than that of staff or group model HMOs.

Nevertheless, the closed panel staff or group model is potentially the most strongly managed form of health care delivery if it can overcome its inherent limitations. It most tightly integrates insurance, a structured delivery system, and dedicated physicians into a system that shares values and takes full responsibility for performance. Shared facilities, large size, and business and organizational form make it easy to employ "industrial strength" management and systems tools to improve performance and to initiate clinical innovations that lead to improved quality outcomes at lower costs. If staff or group models are able fully to use these advantages, they might ultimately replace most IPA-based competitive plans in cities with sufficient population density to minimize the problems of geographic access (Moore, 1993).

In summary, continued pressures from government and business to increase the quality and cost effectiveness of medical care will reinforce this trend of managed care growth. This trend appears to be irreversible. With increased interest in expanding Medicare and Medicaid managed care enrollment, many experts predict its growth rate may even accelerate.

III. Potential Impact of Managed Care on Physician Workforce Supply and Requirements

Finding # 2: The growth in managed care will magnify the physician workforce concerns expressed by COGME in prior reports, that there is a large and growing oversupply of physicians overall and especially of specialists and subspecialists, and that there is a modest need for more generalist physicians.

An important question being raised by policymakers is whether the changes taking place in the delivery and financing of health care under the guise of managed care will have any substantial impact on the nation's staffing requirements for physicians. If so, the question that follows is how any changes in the requirements for physicians will be satisfied by the supply of patient-care physicians in the workforce.

One major variable in the equation is the concept of primary care (Fox, 1994). Primary care, which has been endorsed enthusiastically by the most tightly controlled forms of managed care, can refer to a function of a health care delivery system (Starfield, 1992) as well as of a type of health care provider. According to a recent definition advanced by the Institute of Medicine (IOM), primary care is an array of "integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community" (Donaldson et al., IOM, 1994). Some ambulatory care provided by physicians, as well as non-physicians, is not necessarily primary care according to the IOM definition. *Ambulatory care* refers to any care not provided on an inpatient basis, such as in physicians' offices, clinics, emergency rooms. Often this ambulatory care is delivered by specialist physicians. Examples include allergy/immunology, dermatology, emergency medicine, medical and pediatric subspecialty care, ambulatory surgical care, etc.

Generalist physicians are trained to address the large majority of personal health care needs, and include family physicians, general internists, general pediatricians, and general practitioners (Kindig, 1994). Most generalists provide primary care for patients, but some do not, such as those who choose to work in emergency departments, or who limit their practice to areas such as sports medicine. *Specialist physicians* are those who are trained and practice in specific specialty areas of medicine rather than, as generalists do, to address a broad range of health care needs.

Non-physician providers (NPPs) include, for example, physicians' assistants, nurse practitioners, nurse midwives, nurse anesthetists and optometrists. Some of these providers deliver a broad spectrum of services in primary care, while others provide more limited services that is not primary as they work with specialist physicians in either ambulatory or hospital settings (Weiner, 1994).

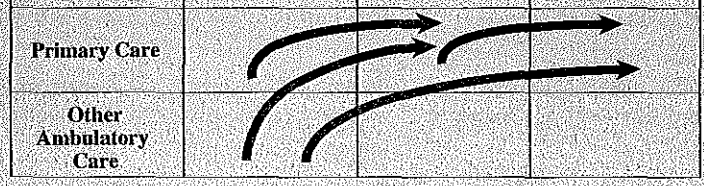
Roles of Providers in Managed Care Organizations

Health maintenance organizations (HMOs) have long embraced the concept of primary care as a means of promoting health, preventing illness, diagnosing the early onset of disease, and managing all the patient's encounters with the health care delivery system (Veloski and Howell, 1994). As confirmed by a recent study of 23 representative HMOs, they show a strong preference for generalist physicians providing this primary care (Felt et al., 1994). While subspecialists in internal medicine have completed three years of an internal medicine residency to prepare them as generalists physicians prior to subspecialization, a recent study found that many HMOs "generally view subspecialists in internal medicine as inappropriate primary care providers" (Felt et al., 1994). The same study reported that, for similar reasons, obstetrician/gynecologists are not often recognized by HMOs as providers of primary care. However, 15 of the 23 plans studied did report that they allow patients to self-refer on a limited basis without the plan's approval for some care from obstetrician/gynecologists. Furthermore, legislation is being developed in some states to designate obstetrician-gynecologists as primary care physicians.

While some HMOs find it difficult to recruit generalist physicians (AM News, Aug. 8, 1994:1), others have been successful in securing the number they need (Palsbo and Sullivan, 1993; Felt, 1994). Recent data suggest that rural plans and those with very high Medicaid enrollments face the greatest difficulties. The preferences of adult patients for either family physicians or general internists vary according to historical patterns in the local area. In one study plans associated with a multispecialty group reported a preference among patients for general internists (Felt et al., 1994).

Figure 8 summarizes the general direction of some of the changes in the roles of physicians being observed in managed care organizations. Some are acting either directly through continuing medical education or indirectly with financial incentives to broaden the scope of

Figure 8
Direction of Changes in Scope-of-Practice Being Introduced in Managed Care



practice of generalist physicians and decrease referrals to specialist physicians (Felt, 1994). Examples of medical areas increasingly managed by generalist physicians include dermatology, musculoskeletal problems, and women's health problems. Other examples include the diagnosis and management of long-term illnesses that might otherwise be provided by a subspecialist in internal medicine (e.g., cardiology, endocrinology, rheumatology) and office surgery that might otherwise be referred to a general surgeon (Iglehart, Nov., 1994).

The relationships of physicians to other providers such as physician assistants (PAs), nurse practitioners (NPs), nurses, psychologists, physical therapists, and optometrists continue to change (AM News, Dec. 5, 1994:3), but systematic data on the changing role of non-physician providers (NPPs) in managed care settings as well as other settings are still limited (Sekscenski et al., 1994). Some evidence suggests that PAs and NPs are providing substantial primary care in a majority of staff and group HMOs. But both Weiner (1994) and Cooper (1994) estimate that about half the effort of PAs and NPs is devoted to providing specific types of ambulatory care (orthopedics, dermatology, and women's health) rather than primary care in general. In addition, specialized services such as mental health counseling, eye care, anesthesia, and physical therapy, as well as some specialized procedures in cardiology, gastroenterology, and surgery are being performed by trained and supervised NPPs. It appears that the less centralized structure of IPAs and networks has not yet encouraged the use of non-physician providers to the same degree in primary and specialty care. But the financial incentives linked to increasing numbers of patients being reimbursed under capitation in these settings are likely to change this situation and in some cases lead to greater use of NPPs.

Forecasts of Supply and Requirements

Assumptions Underlying Forecasts: uantitative forecasts of the number of physicians needed and those available to provide patient care at some future point are usually controversial (Wennberg et al., 1993). One of the reasons there have been misunderstandings and debates about these forecasts of the national requirements versus supply of physicians is that seemingly minor differences in certain key assumptions embedded in these quantitative models can create wide discrepancies among forecasts over time. The accuracy of models depends ultimately on the validity of these key assumptions.

Supply: Any forecast of the supply of physicians begins with a baseline group of all active, full-time physicians, usually those reported in the masterfiles of the American Medical Association and American Osteopathic Association. Some forecasts specifically exclude physicians working full time in teaching, research, or administration. Other forecasts exclude residents and physicians working part-time. If faculty, or house staff, or both are included in projections related to the delivery of patient care, the forecasters must determine how each unit of a physician full-time equivalent (FTE) is to be counted. It is agreed that residents, fellows, and faculty physicians usually see fewer patients per week than full-time patient-care physicians. Some forecasters apply corrections to estimate for the differences in productivity of house staff at different levels of experience. Also, it has been reported historically that women physicians as a group work fewer hours per week and, on average, see fewer patients. However, COGME believes that there is currently no evidence to show that an increase in the number or proportion of women physicians produces a significant decline in effective physician supply (COGME *Fifth Report,* 1995).

These assumptions about number of hours worked per week and how these correlate to one FTE are even more important when considering the impact of variation in productivity in different practice settings. In this regard it is noteworthy that Weiner (1993) reported that his forecasts were sensitive to changing assumptions regarding physician productivity.

A second set of assumptions must be made about the flow of physicians from the medical education pipeline; e.g., the number of physicians in house staff positions and the rate at which they leave postgraduate education to enter practice, or alternate career paths including administration, research, or teaching. Deciding how to handle this movement has been particularly challenging in the past five years as the number of residency positions has increased dramatically, many being filled by international medical graduates (IMGs). One earlier study predicted no surplus of physicians in the year 2000, but assumed that the number of residents would remain constant at the 1983 level of 77,000 (Schwartz et al., 1988). By 1994 the

total number of residents had risen to over 104,000 (Shine, 1995). Forecasts must include the number of foreign physicians who will remain in the U.S. Also, since there has already been some speculation about the potential to reduce the size of residencies in some specialties, forecasts must take into account various scenarios related to the reduced number of new physicians entering the workforce.

A third set of assumptions must be made about the rate at which physicians leave practice. While there is historical evidence to support assumptions about physicians' rate of retirement and movement to non-clinical careers, there is little recent longitudinal information about the rate at which physicians are now moving to administration, research, or other non-clinical careers (Kaufman, 1995). Furthermore, anecdotal evidence suggests early retirement (either complete or semi-retirement) among some physicians who have been unhappy with the changing health care environment. It is possible that older physicians, particularly specialists in oversupply, might retire early (Cooper, 1994). Although historically work-related disability claims have been almost negligible for physicians, a recent report described a five-fold increase in such claims (NYT, Nov. 28, 1994).

Finally, when forecasts for generalist physicians and specialist physicians are generated separately, implicit assumptions are made about who actually delivers primary care (Kravitz et al., 1992; Spiegel et al., 1983). It is usually assumed that only generalist physicians deliver primary care, and that specialists do not deliver primary care. However, it is important to concede that the conventional distinction between generalist physicians and specialist physicians is an artificial dichotomy. This distinction does not necessarily operate as such in actual medical practice (Wartman, 1995). There is even variation among types of generalists. Requirements need to be related to different patient age groups since pediatricians have different qualifications than general internists, but family physicians may care for either pediatric or adult patients. The role of general internists and family physicians with Certificates of Added Qualification in Geriatrics has not always been clarified in certain forecasts, but it is reasonable to assume that those who deliver primary care to elderly populations can be counted as generalists, rather than specialist physicians (Reuben et al., 1993).

When residents are included in supply estimates, it is challenging to allocate the amount of time they devote solely to primary care. Residents spend time in both the hospital and ambulatory settings, but their responsibilities in the ambulatory setting include a mix of primary care as well as other types of ambulatory care. The extent of primary care delivered by subspecialists in internal medicine (sometimes referred to as "principal care") continues to be debated. What is unclear at this point is the degree to which physicians, particularly subspecialists in internal medicine or pediatrics, can shift the direction of their careers to function as generalist physicians providing primary care (AM News, Oct. 24, 1994:3). Similarly, it remains uncertain whether other types of physicians will choose to participate in educational programs to strengthen their skills as generalists. Early informal reports suggested limited interest in such career changes, but more recent reports challenge this supposition (AM News, Dec. 12, 1994). Finally, the decision as to who will be chosen to delivery primary care in managed care settings may ultimately be more closely tied to issues around board eligibility and certification (AM News, Dec. 12, 1994). A recent report of the GHAA indicates that 85 percent of physicians in HMOs are board-certified as compared to 61 percent of physicians overall (AM News, Dec. 26, 1994).

Feil and colleagues (Feil et al., 1993) in 1993 reviewed six substantial, published forecasts of total physician supply in the year 2000. While there was uniform agreement among all that the supply of physicians would exceed projected requirements at the turn of the century, the methods of enumerating the physician supply produced estimates of the total number of physicians who would be practicing in the year 2000 that ranged from 525,000 to 725,000. It is therefore essential to understand some of the key assumptions being made in projections of the physician workforce when considering the potential impact of managed care on the nation's requirements and on the supply of physicians to be educated (Weiner, 1994).

Requirements: The total requirements (i.e., projected staffing needs) for physicians are generally expressed in terms of a ratio of generalist physicians to specialist physicians, or a ratio of number of physicians per population unit of patients (Kindig, 1994). A challenge in forecasting these requirements in recent years has been projecting the extent of the population covered by health insurance. It is understood that some services are currently being provided by house staff, but it is difficult to determine how the staffing requirements currently being fulfilled by house staff can be taken into consideration. Changes in immigration, the age distribution of the population, life expectancy, and the epidemiology of diseases such as AIDS will affect requirements for specialist physicians. Requirements will also be influenced by the impact of non-physician providers and the growing possibility that certain procedures such as sigmoidoscopy will be performed by specially trained NPPs

Table 7 HMO Current FTE Staffing Estimates Physicians per 100,000 Population

	Generalists	Specialists	Total
Seven Kaiser Plans (1)	54	58	112*
Kaiser Portland (2)	56	81	137
GHA Seattle (3)	57	65	122
GHAA Fax Survey 4-1-93 (4)	88	50	138
GHAA Industry Profile 1993 (5)	71	61**	132**
Kindig/Rentmeester Study (6)	62	73	135
Tarlov (7)	66***	54	120
Range	54-88	50-81	112-138

* Mulhausen and McGee forecast the physician-to-population ratio in 2000 to be 129/100,000, but do not forecast the generalist/specialist mix.
** Specialists ratios may not reflect all FTE counts. As a result GHAA reports a total FTE physician ratio of 120/100,000.
*** Includes ob/gyn.

1. Mulhausen R. and McGee J, Physician need: An Alternative Projection From a Study of Large, Prepaid Group Practices. JAMA, 1989, 26(13): 1930-1934.
2. Hooker R, "The Role of Physician Assistants and Nurse Practitioners in a Managed Care Organization" in D.K. Clawson, M. Osterweis (edits.) The Role of Physician Assistants and Nurse Practitioners in Primary Care. The Association of Academic Health Centers, Washington, D.C. 1993.
3. Kronick R, Goodman DC, Wennberg J, Wagner E, The Marketplace in Health Care Reform: The Demographic Limitations of Managed Competition. N Engl J Med. 1993, 328(2): 148-52. (also related NAPS document #04998).
4. GHAA survey conducted 3/31/95, on behalf of BHPr and the Clinton Health Care Task Force (unpublished data).
5. Group Health Assoc. of America, Inc., Patterns of Enrollment. GHAA, Washington, D.C. 1993.
6. Rentmeester K and Kindig D, Physician Supply by Specialty in Managed Care Organizations. Testimony before PPRC, Dec 9, 1993.
7. Tarlov A, HMO Enrollment Growth and Physicians: The Third Compartment. Health Affairs Spring 1986.

Source: *COGME Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations.* Council on Graduate Medical Education, U.S. Department of Health and Human Services, 1995.

rather than by physicians (AM News, Dec. 5, 1994). Assumptions need to be made about the effect of progress in technology (e.g., expert systems, decision aids, telemedicine, new drugs obviating the need for certain types of surgical procedures) and the resulting impact on the indications for procedures currently performed by specialists.

Forecasts of Physician Supply and Requirements: Quantitative forecasts of supply and requirements have played a role in the formulation of federal policy in recent decades (Mullan et al., 1994; Rivo and Satcher, 1993). As recently as the 1960s and 1970s policymakers were concerned about a shortage of physicians in the U.S. This finding spawned initiatives at the federal and state levels to support the development of new medical schools and to expand the number of new students matriculating at existing institutions. The total number of MD- and DO-granting medical schools was expanded and class size was increased at many medical schools. It was hoped that one of the added benefits of this expansion would be that the larger supply of physicians would help to alleviate shortages in medically underserved areas.

During the same period biomedical science was growing rapidly and Medicare was also introduced. Together they provided the intellectual and financial support for the rapid expansion of graduate medical education and the creation of new specialties in medicine. Hospitals increased the size and variety of residency and fellowship training programs. Concern about a potential surplus of physicians just as quickly emerged. It is useful to recall that in 1981 the report of the Graduate Medical Education National Advisory Committee (GMENAC) recommended a reduction in medical school class size, a sharp restriction on the entry of international medical graduates, and a freeze on the number of non-physician providers being trained (GMENAC, 1981). "Had these recommendations been implemented, even partially, it is unlikely we would be confronting the bulge in physician supply that is certain to occur after the turn of the century" (Cooper, 1994).

The Council recently completed a technical paper entitled *Patient Care Supply and Requirements: Testing COGME Assumptions* (COGME, 1995). (The technical paper is being finalized and issued as the COGME *Eighth Report.*) This section summarizes the key findings in the *Eighth Report.*

During the four decades between 1950 and 1990, the ratio of patient care physicians to the U.S. population increased by almost two-thirds, from about 112 physicians per 100,000 population to 182 physicians per 100,000. However, during the period 1965-1992, the ratio of generalist physicians changed little, from 59 to 67 physicians per 100,000, while the ratio of specialist physicians increased dramatically, from 56 to 123 physicians per 100,000. This trend, addressed in previous reports of COGME, has led to recommendations that policy-makers take steps to reduce the number of residency positions and increase the proportion of medical students who pursue careers as generalist physicians.

The *Eighth Report* provides estimates of the requirements for physicians based on the latest projections of the portions of the population that will be covered by various forms of health insurance. This forecast focuses particular attention on recent estimates of the staffing levels for physicians working in health maintenance organizations (Table 7). The data on staffing levels in HMOs have generally shown that fewer specialist physicians are needed to provide care to populations enrolled in tightly-controlled (capitated) managed care settings.

Estimating Physician Staffing Requirements: Five studies in Table 8 project physician requirements into the next century. Four of these utilize demand-based methodologies while one study, GMENAC, used a needs-based methodology to estimate requirements for practicing physicians. While the GMENAC model projected physician need based upon the prevalence of illness and estimates by provider panels of physician services required to handle these illnesses, the demand-based models base their assumptions upon the manner in which medical services are paid (e.g., the percentage of capitated managed care vs. fee-for-service) and project current patterns of utilization to the

future under various assumption. COGME placed special emphasis upon those demand models which assume increasing domination of the health care system by managed care arrangements (Table 8, BHPr Managed Care Scenario and Weiner estimates). These systems use fewer patient care physicians per 100,000 population and a higher proportion of generalists than do the fee-for-service arrangements which previously have dominated health care delivery in this nation.

All the above scenarios project generalist requirements for the year 2000 and the year 2020 in the same range. COGME concludes that a reasonable projected requirements range for generalist physicians would be approximately 60 to 80 patient care generalist physicians per 100,000 population.

Although all five scenarios placed generalist requirements in the same range, projections of specialists requirements vary markedly. The Cooper scenario as well as the BHPr's Utilization-based Fee-for-Service scenario anticipate increasing demand for specialists as a result of demand for utilization of new technology and the availability of additional specialists. The BHPr's Managed Care scenario and the Weiner model project much lower requirements in the year 2000 as a result of economies brought on by managed care. The GMENAC model, utilizing a totally different methodology, projects year 2000 requirements only slightly higher then the Weiner and BHPr's Managed Care models. Further, the BHPr's managed care model projects no further increase in specialist requirements in the early 21st century as increasing efficiency is obtained from the health care system.

COGME concludes that the managed care dominated system projections provide the most realistic projections of specialist physician utilization in the early 21st century. Those analyses assume that managed health care systems will require fewer specialists per population than exist under the current fee-for-system, that new technological advances are as likely to reduce demand for specialists as increase demand, and that non-physician providers may continue to provide a range of specialty services that physicians traditionally provided. From these managed care analyses, COGME concludes that a reasonable projected specialist physician requirements range in the early 21st century would be approximately 85 to 105 specialist physicians per 100,000 population.

Comparing Supply and Requirements: Given the current production (i.e., 25,000 first year residents, equivalent to the number of US medical students graduates plus 40 percent) and specialty output (i.e., 30 percent generalists:70 percent specialists), the patient care specialist supply is projected to increase from 140 to 150 specialists per 100,000 between the year 2000 to 2010. This compares with COGME's estimated specialist physician staffing requirements of 85 to 105 specialists per 100,000 population in a managed care dominated environment. This would translate into a projected surplus of 125,000 specialists in the year 2000 and 170,000 in the year 2010. During the same period, the generalist supply is projected to remain stable at 63 to 67 generalists per 100,000 population, compared with COGME's estimated staffing requirements of 60 to 80 generalists per 100,000. This would represent a modest shortage of 20,000 generalists in the year 2000 declining to 8,000 (or near balance) in 2010. The potential for physician underemployment or unemployment as we enter the 21st century is suggested by this and other workforce analyses, whether they assume that managed care or fee-for-service arrangements will predominate.

Figures 9 through 12 summarize the relationship between the projections of the requirements contained in the paper versus the supply of generalist and specialist physicians in the early part of the next century. These figures illustrate the relationship between requirements and supply of physicians as a function of certain key assumptions regarding the number of residents in training and the specialty choice of resident graduates. The range of estimates of requirements for generalist and specialist physicians are displayed as density functions in physicians per 100,000 (require-

Table 8 Generalist and Specialist Patient Care Requirements & Forecasted Supply Under Current Trends

Physicians per 100,000 Population

	Year 2000			Year 2020		
	Gen.	Spec.	Total	Gen.	Spec.	Total
BHPr Managed Care Scenario (1)	77	96	173	81	92	173
WEINER (2)	59	82	141	—	—	—
GMENAC (3) (4)	72	106	178	—	—	—
BHPr Fee-for-Service Scenario Utilization-based (5)	69	138	207	76	149	225
COOPER (6)	75	128	203	75	148	223
REQUIREMENTS RANGE	59-77	82-138	141-207	75-81	92-149	173-225
SUPPLY	63	140	203	66	148	214

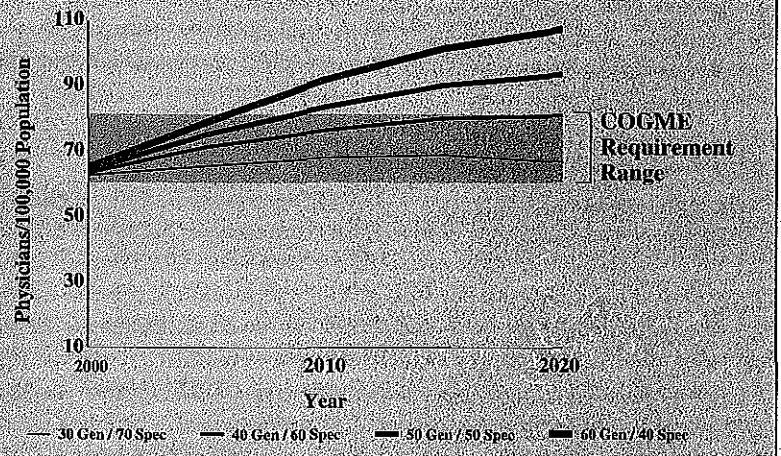
1. Gamliel S, Politzer R, Rivo M, Mullan F. Managed Care on the March: Will the Physician Workforce Meet the Challenge? Health Affairs. Summer 1995.
2. Weiner, Jonathan P, Forecasting the Effects of Health Care Reform on U.S. Physician Workforce Requirements: Evidence from HMO Staffing Patterns. JAMA, 1994, 272(3): 222-30.
3. Bowman MA, Katzoff JM, Garrison LP, Wills J, Estimates of Physician Requirements for 1990 for the Specialties of Neurology, Anesthesiology, Nuclear Medicine, Pathology, Physical Medicine and Rehabilitation, and Radiology: A further Application of the GMENAC Methodology. JAMA, Nov 18, 1983, V250.
4. Summary Report of the Graduate Medical Education National Advisory Committee, Sept. 1980, Vol I, US Dept of Health and Human Services pub. No. (HRA) 81-651. Office of Graduate Medical Education, Health Resources Administration, April 1981.
5. Refinements to BHPr Requirements Forecasting Model, Vol II: Data and Methodology. Prepared by Vector Research, Inc. under contract to BHPr, HRSA, April 1993.
6. Cooper R, Seeking a Balanced Physician Workforce for the 21st Century. JAMA, 1994, 272(9): 680-87.

Source: *COGME Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations.* Council on Graduate Medical Education, U.S. Department of Health and Human Services, 1995.

ment bands). These ranges are based on assumptions regarding the size of the population and the staffing requirements of a projected mixture of fee-for-service settings and managed care.

Figure 9 compares generalist patient care supply and requirements assuming the current number of residents in training — about 140 percent of 1993 U.S. graduates and then varies the generalist/specialist mix of residency graduates. If only 30 percent of medical students pursue generalist careers (higher than the current rate), the supply will not be sufficient to reach the midpoint of the requirements range, but is within the lowest part of the band. An increase in the proportion of students entering generalist careers to 40 percent or higher would provide a more comfortable margin of generalist physicians and would help to prevent any shortage in later years.

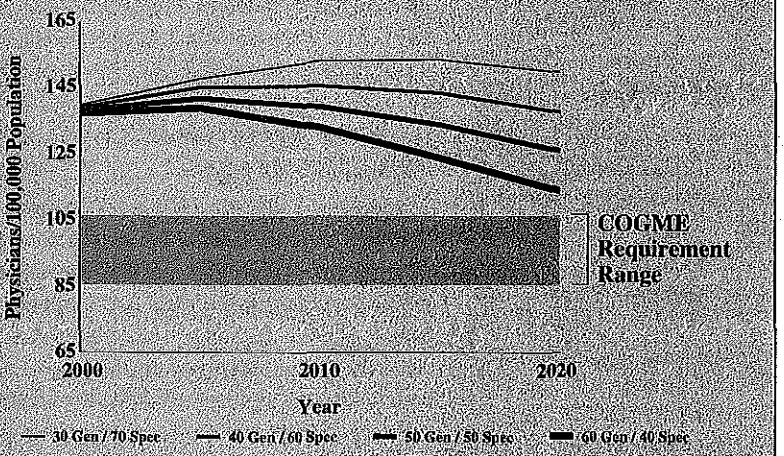
Figure 9
Generalist Patient Care Physician Supply Assuming Current Physician Output* Under Various Specialty Mix Scenarios



* Physician Output at 140% of U.S. Medical Graduates

Source: *COGME Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations*. Council on Graduate Medical Education, U.S. Department of Health and Human Services, 1995

Figure 10
Specialist Patient Care Physician Supply Assuming Current Physician Output* Under Various Specialty Mix Scenarios



* Physician Output at 140% of U.S. Medical Graduates

Source: *COGME Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations*. Council on Graduate Medical Education, U.S. Department of Health and Human Services, 1995

Figure 10 compares specialist patient care supply and requirements assuming the current number of residents in training as above. It illustrates the difficulty that specialists may face in the health care marketplace, even if the number of graduates who choose specialty careers declines from 70% to 40%. If over the next few decades the same numbers of residents begin training, specialist supply will substantially exceed requirements well into the 21st century.

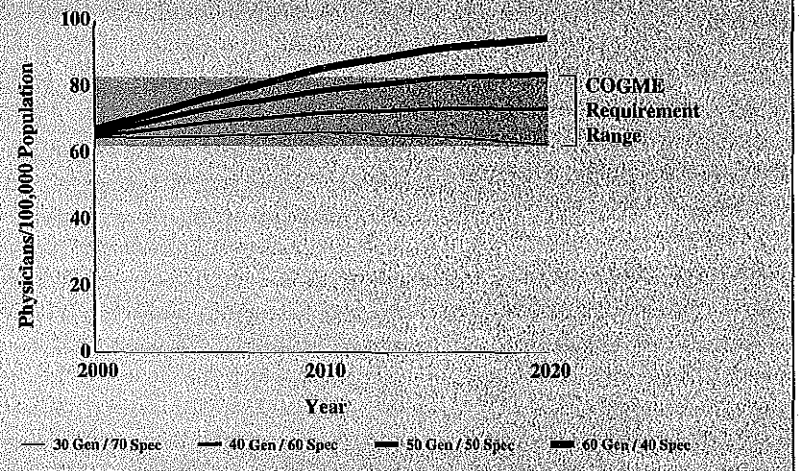
In previous reports, COGME has recommended that the number of first-year residency positions be reduced to from 140% to 110% of the number of U.S. medical school graduates (USMGs). Figures 11 and 12 present forecasts of various scenarios if the number of new physicians entering the workforce each year were 110% of USMGs.

Figure 11 compares generalist patient care supply and requirements. The data indicate that the supply of generalist physicians would remain within projected requirements ranges only if at least 40% of graduates chose generalist careers and would meet staffing requirements more rapidly if at least 50% of graduates became generalists. **Figure 12** shows that the surplus of specialist physicians would be significantly reduced if the number of residents beginning training is reduced to 110% of USMGs and at least 50% of residency graduates choose careers as generalist physicians.

While these projections consider a wide range of differing assumptions, two patterns clearly emerge. First, it appears that the supply of generalists is barely adequate to fulfill even the low range of requirements. Second, all projections portend a surplus of physician specialists. This surplus will continue to increase unless the total number of residency positions is reduced and the proportion of medical students entering generalist careers is increased dramatically from the current level of under 30 percent.

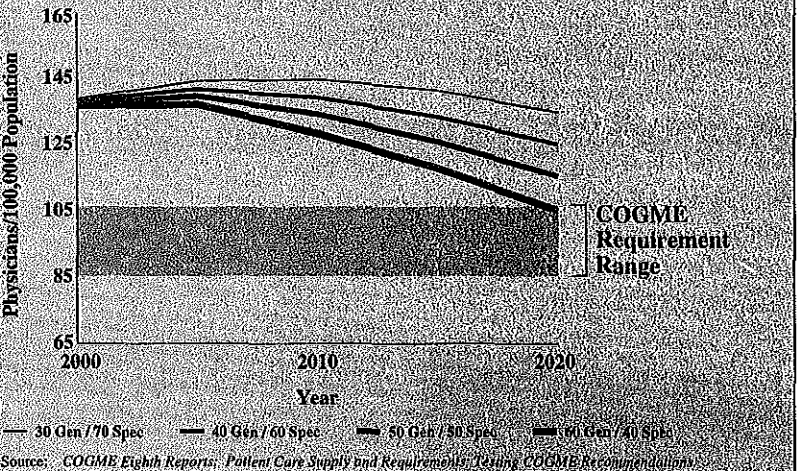
Limitations of Supply and Requirements Analyses: While there is variation in the numerical results of these three recent forecasts of the physician workforce, they all point in the direction of an oversupply of specialist physicians (AM News, Aug. 8, 1994:1). Each forecast considered, to varying degrees, the impact of managed care on the marketplace. The

Figure 11
Generalist Patient Care Physician Supply Under Alternative Specialty Mix Scenarios When Physician Output Reduced to 110% of U.S. Medical Graduates



Source: *COGME Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations*. Council on Graduate Medical Education, U.S. Department of Health and Human Services, 1995

Figure 12
Specialist Patient Care Physician Supply Under Alternative Specialty Mix Scenarios When Physician Output Reduced to 100% of U.S. Medical Graduates



Source: *COGME Eighth Report: Patient Care Supply and Requirements: Testing COGME Recommendations*. Council on Graduate Medical Education, U.S. Department of Health and Human Services, 1995

reasoning and conclusions were correspondingly consistent in direction. More precise estimates of the impact of managed care on the oversupply will ultimately depend on a clearer understanding of the following four issues:

Requirements of different types of managed care organizations: Much is currently known about the staffing patterns of group and staff model HMOs, which have been the only source of data for use in forecasting requirements for physicians in managed care (Kindig, 1994; Mulhausen and McGee, 1989). It is not really clear whether the same assumptions can reasonably be applied to networks that use large multispecialty groups. Little has been reported about the staffing patterns of IPAs in which groups of physicians contract with more than one insurer while also participating in PPOs and FFS. This is particularly true of the rapidly growing, small group IPAs. Furthermore, requirements vary geographically and requirements differ for women and minority physicians.

It has been argued that physicians in solo or small group practices are more productive because they work more hours and see more patients than full-time physicians in staff and group model HMOs. Furthermore, IPAs offer greater staffing flexibility in that an insurer can expand coverage by adding practitioners to its panel of physicians without capital expenditures. If one accepts these assumptions, then fewer physicians will be needed to provide care to patients in IPA settings. Others argue that small practices lack the economies of scale of group and staff model HMOs and network models, and the rate of using non-physician providers is lower in IPA practices. If one accepts these assumptions, then IPAs require a higher ratio of physicians per unit of patient population.

These issues are even more complex when one considers the hybrid forms of managed care such as the point-of-service (POS) plans (also referred to as the open-ended option). Traditional staff and group model HMOs are innovating to meet new competition. Some are offering more open access to primary care by mandating that physicians be available a certain number of hours per week, including evenings and Saturdays. A critical question that will need to be answered in order to refine forecasts is the degree to which physicians' productivity varies in group and staff model HMOs as opposed to smaller group IPAs.

Out-of-Plan Use: A continuing question being raised is the degree to which some patients enrolled in closed panel staff and group HMOs seek additional medical care outside the managed care plan, either by paying out-of-pocket or by using the coverage of a second indemnity policy of a spouse. No formal estimates of this phenomenon are available (Weiner, 1993) and this has not been considered in forecasts. If this does occur to any significant extent, it leads to underestimates of the staffing patterns of staff and group HMOs. Similarly, there has been speculation (Weiner, 1993) that the staffing statistics of staff and group

model HMOs may not accurately reflect their requirements for highly specialized physicians. These include, for example, pediatric oncologists or pediatric ophthalmologists, who are needed infrequently even in large patient populations and whose services are negotiated by the HMO under separate contracts on a case-by-case basis. Furthermore, hospital-based specialists (e.g., anesthesiology, emergency medicine, radiology, pathology) whose fees are included in hospital per diem charges are not always reflected accurately, if at all, in the HMO staffing data that are being used in forecasting requirements.

Older and Sicker Populations: It has been widely believed that managed care, has tended to attract younger and healthier populations than FFS plans (Kindig, 1994). This has been true particularly when the patients have some degree of choice between managed care and indemnity coverage. However, it is now changing as more employers shift their employees into managed care. The precise impact of the recent shift of larger Medicare and Medicaid populations to managed care remains uncertain, but it appears that the age and health status of patients covered by managed care and indemnity insurance is becoming more similar. One recent study based on a sample of 98,940 nonelderly respondents to the 1992 Health Interview Study refuted the notion that chronic illness is more prevalent among person covered by indemnity insurance than by HMOs, even when health status and sociodemographic factors were controlled (Fama et al., 1995).

Changes in Patient (Consumer) Preferences: In certain markets there remains a strong consumer preference for unrestricted access to specialists. This in part has created the demand for point-of-service (POS), or open-ended, options, in which a patient who is willing to pay some portion of the fee, can choose to see any physician at any time, even those outside of the health plan's formal network. Although patients initially choose this option they do not always appreciate the out-of-pocket costs for their deductible and may not exercise their option frequently. Informed reports indicate that utilization is low. Nevertheless, enrollment in POS options continue to grow because these plans offer flexibility for some patients who are concerned about maintaining direct control over some of their health care decisions. Changes in patient preferences may have a variable impact on supply and requirements analyses.

IV. Impact of Managed Care on Medical Education

The growth of managed care is likely to affect medical education in two ways. First, medical schools and teaching hospitals will be forced to adapt to the changing health care environment, in order to survive financially. These changes will have both direct and indirect effects on the educational programs for medical students and resident physicians. Second, the content and process of medical education should be influenced by the needs and requirements of the changing health care system, including the managed care organizations where physicians will practice.

Impact on medical schools and teaching hospitals

Finding # 3: Changes in the health care environment that have led to the growth in managed care will also have major effects on the allopathic and osteopathic medical education system and their teaching institutions; this will likely result in decreased financial support for medical education at both the undergraduate and graduate levels, which could affect the quality of these endeavors.

As managed care penetration increases, it is likely that revenues from faculty practice and from teaching hospitals will decrease (Whitcomb et al., 1993), although this has occurred in only a few sites to date (Kassirer, 1994). Many medical schools are dependent on the income from clinical service for a large proportion of their revenues. For the academic year 1992-1993, an average of about 33 percent of revenue in MD-granting schools was derived from faculty practice. In that year, clinical service, defined as faculty practice, reimbursement from hospitals, and grants/contracts for services and multipurpose programs, made up almost one-half of total medical school revenues (Ganem et al., 1994). The percentage of total medical school revenues in MD-granting schools from clinical service has been rising steadily (29 percent in 1980-1981, 39 percent in 1987-1988, and 48 percent in 1992-1993), as has the absolute dollar amount of clinical revenue (Ganem et al., 1994; Jolly et al., 1990).

However, there are differences among MD-granting medical schools in the amount of practice-income generated. The differences appear to be related, in a large part, to the number of full-time clinical faculty members (Krakower et al., 1994). For DO-granting medical schools an average of 9 percent of medical school revenue was derived from faculty practice in 1992-1993 (AACOM, 1994). These data illustrate that decreases in the clinical service revenues of many medical schools will have implications for their overall financial status and, consequently, how well they are able to carry out their missions of education and research.

Many medical school-owned and other hospitals with teaching programs are vulnerable to the changing environment due to their lack of an adequate primary care faculty base, a surplus of specialty faculty and, in general, their higher patient care costs. As employers are attracted to the lower costs of managed care plans, more individuals are enrolling in these plans, which can restrict their access to providers and hospitals. Teaching hospitals and faculty practice groups must, therefore, compete for managed care contracts in order to maintain their patient base, negotiating rates of payment that may be below cost (Kassirer, 1994), or form their own managed care organizations.

In some environments, the effects of increases in managed care are exacerbated by other fiscal constraints. For example, New York City teaching hospitals are facing large reductions in Medicaid funding from the state, as well as a rapidly growing managed care market (NYT, Feb. 13, 1995). At the University of California - Davis, the Dean reported a large medical school operational deficit because of reduced support from the University and an imbalance between clinical revenues and expenditures, resulting from decreased referrals and declining reimbursement for each "unit of work" (Lazarus, 1995).

Decreased revenue from clinical service, due to the increasingly competitive health care environment, has the potential to affect the educational activities of teaching institutions. A percent of faculty practice revenue often is given to the medical school as a "dean's tax," which, in turn, can be used as discretionary funding to support education and research. For example, community-based ambulatory teaching is, in part, supported funded by these discretionary funds.

It is important to remember that graduate medical education (GME) is funded by clinical service revenues, a proportion of which come from the federal government. In 1991, 29 percent of the total direct costs of graduate medical education (GME)—which include the salaries and benefits of resident physicians, salaries paid to attending physicians for supervision and administration related to GME programs, and overhead allocated to GME programs—were funded by Medicare (GAO, 1994). Medicare direct GME payments amounted to an estimated $1.8 billion in 1995.

In addition, the Medicare indirect medical education (IME) adjustment totaled about $4.5 billion in that year. The direct and indirect medical education adjustments are paid to teaching hospitals based on formulas that take into account the number of resident physicians (Mullan et al., 1993).

It is clear that reductions in Medicare funding could affect GME programs. However, changes in the availability of funding from other payers that also contribute to GME can have deleterious effects. For example, losses in revenue experienced by the University of Tennessee Medical Center hospital when the state changed to a managed Medicaid program that did not explicitly pay for GME resulted in a decrease in the number of residency positions (HRSA contract 240-93-0040). TennCare instead encouraged the teaching hospitals to form new HMOs, to compete and to negotiate to recover their educational costs. Three of these hospitals developed HMOs, expanding primary care services in an attempt to attract enough capitation to minimize adverse selection and support their educational programs. However, the state set initial capitation rates at only about 65 percent of prior Medicaid fee-for-service costs, leaving little room for the teaching hospitals to negotiate educational cost. Furthermore, when TennCare was implemented fewer than 20 percent of the eligible patients in the service areas of the teaching hospitals chose to enroll in their HMOs, resulting in underutilization and adverse selection in these HMOs. The resulting impact on graduate medical education and disruption of the mission of teaching hospitals in Tennessee provides an example of the potential for unintended consequences after a rapid shift to managed care (Memorandum, from R. Robert Herrick to Robert L. Summitt, M.D., February 28, 1995). Finally, while governmental funding has been critical in supporting graduate medical education activities, private payers also have contributed, usually by implicitly or explicitly agreeing to pay the patient care higher costs associated with teaching institutions. This is now becoming less likely to be the case.

The ability of teaching hospitals to obtain managed care contracts may be hampered by their higher costs. For example, the average 1991 cost per adjusted patient day was $995 at hospitals that were members of the Association of American Medical Colleges Council of Teaching Hospitals (COTH), $778 at non-COTH teaching hospitals, and $628 at non-teaching hospitals (AAMC, 1993/G7). The higher costs of teaching hospitals are the result of several circumstances, including patients with more serious and complex clinical problems, the increased use of services due to learning needs of trainees (Cameron, 1985; Fox and Wasserman, 1993) and the expenses associated with the provision of uncompensated care.

Teaching hospitals, especially those that are part of academic medical centers, provide a relatively high percentage of uncompensated care. In 1991, uncompensated care was 9.6 percent of total revenue in the 120 hospitals that were classified as part of academic medical centers by the Association of American Medical Colleges, as compared to 5.1 percent in non-teaching hospitals (AAMC, 1994). Until there is universal coverage for health care, medical schools and their associated teaching hospitals overall may continue to play a major role in providing care to the uninsured and underinsured. This function has been supported by the availability of supplemental funding, such as the Medicare IME and disproportionate share payments, cost shifting from other payers, and by the availability of resident physicians and faculty members who provide service. Changes in funding levels or in the numbers of residents and faculty members may affect the ability to provide these services.

There are several general strategies that medical schools and teaching hospitals which have been affected by the changing environment can be and are taking, singly and in combination. There may be internal reorganizations such as the creation of systems designed to integrate the medical school, teaching hospital and faculty practice plan into an efficiently functioning system. This type of organization can become the central player in negotiating contracts with managed care plans (Iglehart, 1995). Some public academic medical centers have been allowed by their state legislatures to create new organizational entities that can function with fewer restrictions. Legislation created the private University of Maryland Medical System, including the University Hospital, the Shock Trauma Center and the University of Maryland Cancer Center. The new entity was designed to be able to respond quickly to an increasingly competitive health care marketplace (Schimpff and Rapoport, 1992). As another example, the Oregon Health Sciences University is attempting to separate from the state system of higher education and be reconstituted, through legislation, as a public corporation. This would remove the requirement that the University be subject to regulations, such as contracting and approval processes that apply only to state agencies.

Many institutions have chosen a variety of strategies. In Minneapolis, where about 43 percent of the population is enrolled in managed care organizations, the University of Minnesota Hospital experienced decreased admissions because the University was unwilling to negotiate discounted prices. Concerns about the financial viability of the hospital led to changes such as the formation of integrated service networks, and to the negotiation of contracts based on discounted rates (St Paul Pioneer Press, November 14,

1994). The UCLA Medical Center, also in an area with high managed care penetration, has worked to decrease costs by shortening length of stay and reducing personnel. The hospital and the physician practice plans have merged contracting functions, allowing inpatient and outpatient services to be packaged. The faculty practice plan is considering merging into a multispecialty group. Finally, UCLA is starting an IPA in the region around the medical school (AM News, August 8, 1994). Medical schools are also forming new patient care networks or joining existing networks (Iglehart, 1995). Still others are considering selling there flagship tertiary care teaching hospitals, an almost inconceivable proposition even two years ago. The goal is to increase competitiveness by allowing the University to respond more quickly to the changing health care marketplace (Iglehart, 1995).

The two previous examples highlight changes that some medical schools and teaching hospitals are making that could be considered contrary to the "culture" of academic medicine. Traditionally, academic medicine has placed a high value on departmental autonomy, a decentralized decision-making structure based on consensus, and a commitment to the primacy of education and research (Fox and Wasserman, 1993; Kassirer, 1994; Rogers et al., 1994). Also, the higher costs associated with the learning needs of trainees, such as increased use of diagnostic tests and procedures and longer lengths of stay, have been accepted as part of the normal operational expenses of teaching hospitals by faculty members and administrators (Fox and Wasserman, 1993). However, this philosophy may no longer be possible. A study by the RAND Corporation recommended the following steps should be taken to ensure the survival of academic medical centers: (1) develop a centralized, effective governance system; (2) create a spirit of entrepreneurship at all levels; (3) create incentives for faculty members to generate revenue; (4) develop a methodology to allocate resources in a strategic manner; and (5) display a willingness to pursue cost containment (Schimpff and Rapaport, 1992). The need to be more competitive and to control costs is now leading to more centralization of authority for the patient care function and to more stringent monitoring of physician and resident utilization patterns (Wartman, 1994), which lead to such things as a reduction in resource utilization (such as test ordering) strictly for educational purposes.

The movement of medical schools and teaching hospitals into the managed care arena has taken several forms. First, medical schools have started their own managed care organizations, an early example being the George Washington University Health Plan, a group model HMO. Initially started in a medical school department, the HMO director now reports to the Vice Chancellor for Health Affairs of George Washington University (HRSA contract 240-93-0040). In this model, the academic medical center and its "faculty" provide the full range of primary, secondary, and tertiary services. In contrast, Duke University Medical Center has made the decision that an academic medical center should focus on tertiary care. Duke has acquired the practices of a number of primary care physicians, who will work for a subsidiary of the medical center, and also is negotiating with an insurance company to develop an HMO as a joint venture (Rogers et al., 1994). Medical schools also may affiliate with existing managed care organizations. The University of Miami and the Public Health Trust/Jackson Memorial Hospital formed a strategic alliance with Physician Corporation of America (PCA), a large managed health care organization serving the Southeastern United States and based in Miami. Through this alliance, PCA provides management, marketing and primary care assistance to an academic medical center and its network of more than 900 physicians and associated hospitals serving millions of patients in South Florida, the Caribbean and Latin America (PCA, 1995). Similarly, the Ohio University College of Osteopathic Medicine is exploring a joint venture agreement with an HMO to establish a managed care system that will both provide improved access to care for the rural, underserved community in the area and serve as a training site for osteopathic students.

Data are limited on the degree to which medical schools are entering into managed care arrangements or what form these arrangements take. Mixed models are probably common, as in managed care organizations in general. For example, the George Washington University Health Plan has affiliated with an independent practice association to increase its patient base. The physicians in this affiliate may not be directly associated with the teaching program of the medical school. Starting a managed care organization is not without its dangers. A case study at one medical school illustrated that things such as faculty resistance arising from a specialty-focused organizational culture can negatively impact the ability to make the changes necessary to maintain a university-owned HMO (Bosch and Deuschle, 1993).

As medical schools form patient care networks and establish practice sites outside the academic medical center, they potentially come into competition with community physicians. This could exacerbate "town-gown" tensions, which is especially troublesome at a time when medical education is requiring an increased use of community-based sites for teaching.

In addition to institutional level associations between medical schools and managed care organizations, there are also departmental level affiliations. A 1990 survey of residency programs in family medicine, internal medicine and pediatrics by the GHAA showed

that 64 percent of their sample of family practice programs, 28 percent of pediatrics programs and 24 percent of internal medicine programs had contracts with managed care organizations to provide service to enrollees (Corrigan and Thompson, 1992). While these types of contracts probably have been beneficial financially, there is little information about how they impact the educational aspect of the residency programs.

One report about the effects of a major increase in enrollment of prepaid patients in a university-based family practice residency program (Curtis et al., 1988) described the tensions caused by an increased patient volume and a new emphasis on cost containment. There also is beginning to be anecdotal evidence that when managed care has entered some sites where residents are trained, resident involvement in some patient care activities has been limited. If this proves to be a consistent pattern, it can have major implications for resident education and program accreditation.

As medical schools form or associate with patient care networks, a number of issues arise related to the way that medical schools traditionally function. One is the effect that this expansion might have on the definition and role of "faculty." For example, are the new, often employed staff who became part of the medical school when it enters networks or acquires practices available for the teaching program? Do they take part in the governance structure of the medical school and are they subject to the same evaluation criteria as full time faculty members? How does the governance of the medical school interact with the management of the health care delivery enterprise? Is the traditional faculty-driven, committee-based decision-making structure that characterizes the academic program separate and distinct from the way that faculty practice is managed?

Also, how will patient care networks and networks for the education of medical students and residents co-exist if they are not contiguous? For example, will students and residents be able to rotate in educationally appropriate sites that may be members of a patient care network in competition with the medical school? These questions will have to be addressed as part of the planning for medical schools and teaching hospitals as they move into the managed care arena.

In summary, the net effect of increased competition may well be a decrease in clinical income for many teaching institutions, which has traditionally supported their medical educational components. Increased competition may also result in a decrease in the availability of other important educational resources, such as training sites, teachers, and patients. These necessary adjustments may be considered contrary to the traditional "culture" of academic medicine, which placed a high value on departmental autonomy and a decentralized decision-making structure. Nonetheless, teaching institutions that cannot adjust may see the quality of education at the undergraduate and the graduate level affected as well as their own survival threatened.

Impact On Student And Resident Education

Finding # 4: The growth of managed care will magnify the deficiencies of the current educational system, yet will also provide new and essential educational opportunities to improve the preparation of physicians for their future roles.

The growth of managed care will have both direct and indirect effects on the educational program for medical students and house staff. As a response to the needs of the changing health care environment, educational programs will have to produce a physician with a new set of skills and new areas of knowledge than previously. This will require shifts in the content of the educational program and also in the sites used for clinical training. In addition, educational programs will have to be delivered in the context of the changes that are occurring in medical schools and teaching hospitals as managed care increases, including potentially decreasing revenues and the formation of patient care networks.

Competencies for Primary Care and Managed care Practice

Generalist physicians in primary care practice require basic knowledge and skills that are applicable across practice settings. Rivo and colleagues (1994) developed a list of competencies related to common prevailing conditions and diagnoses that generalist physicians should be expected to manage. These included comprehensive preventive care; treatment of common acute, chronic and behavioral problems; and other areas such as cost effective care, medical ethics, patient education, and coordination of consultant care. In addition, additional knowledge and skills may be required based on a specific practice setting, for example, a managed care organization (Table 9).

The GHAA (in *Primary Care Physicians: Recommendations to Reform Medical Education. Competencies Needed to Practice in HMOs, 1994*, recently described the following competencies needed for generalist physicians to practice contemporary medicine to panels of patients in managed care settings. Appropriately trained generalist physicians will be able to:

- Foster health promotion and deliver disease prevention services
- Communicate effectively with patients and panels of patients

- Detect, diagnose and effectively manage common symptoms, and physical signs
- Manage common acute and chronic medical conditions, including musculoskeletal and mental health conditions, and perform ambulatory diagnostic procedures and simple surgery
- Understand and practice the principles of effective quality improvement
- Refer appropriately to other specialists for needed health care services and coordinate all aspects of care, including technology
- Detect, understand, and manage health risk problems of the home and work place
- Demonstrate leadership and team building skills, including resource allocation, for effective practice management in an organizational care system
- Use clinical and management information systems to analyze and improve practice and practice patterns
- Engage in participatory decision making with patients, families, and other providers
- Understand the health related needs of a defined population
- Apply a general knowledge of managed care systems in evaluating the relevant medical literature

What other content and skills have been suggested as needing addition and reinforcement in the medical curriculum to better prepare physicians for practice in a managed care environment? These include cost effective use of a wide range of diagnostic and treatment services (Jacobs and Mott, 1987; Moore, 1993; Wartman, 1994); utilization review/quality assurance (Jacobs and Mott, 1987); population-based clinical medicine, including epidemiology and biostatistics (GHAA, 1994; Greenlick, 1992); the application of quality improvement methods and principles to improve the health and healthcare of communities (Headrick et al., 1995) and health care system structure/health care financing (Jacobs and Mott, 1987; Moore, 1993).

In addition to knowledge of specific content and clinical skills, the new physician should possess certain characteristics relevant to practice in a managed care setting. A major skill is being a "team player," that is, being able to work in groups of physicians and use peers as mentors and consultants. A part of this is comfort with oversight by peers, especially as an informal part of everyday practice (HRSA contract 240-93-0040). Additional skills cited as important include the ability to work with other health professionals (Jacobs and Mott, 1987).

There have been calls for changes in the medical education program based on evidence that medical residents completing training today are not optimally prepared for some aspects of practice in the evolving health care delivery system. A 1991 survey of physicians under the age of 45 by the Robert Wood Johnson Foundation revealed that only 60 percent believed that they were well trained to provide preventive care, 41 percent believed that they were well trained to provide cost-effective care, and 32 percent that they were well trained to coordinate patient care with community services and resources. About one-third believed that they had spent too little time during training in hospital-based outpatient units, one-half that too little time was spent in long-term care facilities and two-thirds that they spent too little time in physician offices or organized managed care settings (Cantor et al., 1993). It is important to note that the physicians responding to this survey were not just practicing in managed care organizations. That is, medical education may not be adequately preparing new physicians for a variety of practice arrangements. Medical stu-

Table 9 Training Components Addressing Generalist Medical Skills

Care of the population
- Care of Newborns
- Care of infants
- Care of children
- Care of adolescents
- Care of adults
- Care of the elderly

Care of patients in multiple settings
- Ambulatory care
- Hospital care
- Home care
- Nursing home/hospice care

Comprehensive preventive care
- Epidemiology of illness
- Health promotion counseling (including injury prevention)
- Prenatal care
- Infant/child preventive care
- Adolescent preventive care
- Adult preventive care
- Nutrition counseling
- Family planning
- Genetic counseling
- Tobacco/drug counseling
- Screening for cervical cancer/Papanicolaou tests
- Screening for other cancers (eg, skin cancer)
- Prevention of heart disease
- Immunization services

Treatment of common acute illnesses
- Training in emergency medicine
- Musculoskeletal (eg, fibromyalgia, tendinitis)
- Gynecologic (eg, vaginitis)
- Urologic (eg, urinary tract infection)
- Ear, nose, and throat (eg, otitis mefdia, sinusitis)
- Opthalmologic (eg, corneal abrasion, conjunctivitis)
- Dermatologic (eg, scabies, pediculosis)
- Infectious (eg, cellulitis, pneumonia)

Ongoing treatment of common chronic conditions
- Cardiovascular (eg, angina, hypertension, stroke)
- Endocrine (eg, diabetes, thyroid disease)
- Rheumatoid arthritis/osteoarthritis
- Pulmonary (eg, asthma, bronchitis, emphysema)
- Skin (eg, acne, dermatisis)
- Gastrointestinal (eg, ulcer, irritable bowel)
- Genitourinary (eg, urinary incontinence)

Ongoing treatment of common behavioral problems
- Depression
- Anxiety disorders
- Other problems (eg, stress, grief reaction)
- Substance abuse
- Patient counseling skills

Other training for generalist practice
- Community/public health
- Use of community resources continuity care with assigned patients
- Coordination of consultant care
- Comprehensive assessment
- Patient education
- Evaluation of undifferentiated problems
- Evaluation of occupational/school health-related illnesses
- Interdisciplinary training
- Cost-effective care
- Medical ethics
- Death and dying counseling
- Medical informatics/computer training
- Critical medical literature appraisal
- Practice management (eg, managed care)
- Risk management

Source: Rivo et al., JAMA, May 18, 1994, Vol. 271, No.19

dents report that they are not adequately prepared in key competencies required by the emerging health delivery systems. In response to a 1991 survey conducted by the AAMC, 49 percent of seniors cited inadequate instruction time in public/community health, 55 percent in preventive care, 57 percent in information/literature analysis, 64 percent in cost-effective practice, and 73 percent in practice management/managed care (COGME Fourth Report).

Furthermore, a recent survey of administrators and staff in managed care organizations revealed the perception that the educational preparation of new physicians was not optimal. Three-fourths of respondents to the survey, which was conducted by the GHAA under contract to HRSA, reported that newly-hired general internists and obstetrician/gynecologists were poorly prepared for managed care practice, 60 percent believed that pediatricians were poorly prepared and 50 percent believed that family physicians were poorly prepared (Palsbo and Sullivan, 1993). One HMO reported that it takes about 12 months for a newly-hired physician to understand and practice cost-effective managed care (Larsen et al., 1993).

Curriculum for Managed Care Practice

How, where, and when should content and skills relevant to practice in managed care setting ideally be incorporated into the curriculum? It is important here to think of medical school and residency training as a continuum, where core knowledge and skills are both introduced and reinforced. Curriculum planning should consider what knowledge/skills relevant to practice in a managed care setting should be required for all physicians and which are specialty-specific. It is also critical to consider who will teach the new content and skills. Are such individuals currently represented among the faculty in medical schools and residency programs or must medical education seek other sources of faculty and sites for training? The need to expand the content and skills in the medical school and residency curriculum presents opportunities to reach out to teachers beyond the academic medical center. Some skills, such as comfort with teamwork and with oversight, might better be taught by role modeling in a compatible environment than by didactic presentations. Managed care organizations themselves could provide appropriate settings to teach this type of content to medical students and residents. An example of this is the establishment of the Managed Care Institute at Michigan State University in partnership with the Blue Cross Network - Health Central, in which the College of Osteopathic Medicine and Human Medicine will use an interdisciplinary approach to study and teach about managed care.

The answer to the question of who will teach is complicated by the need for faculty members to be more productive in patient care, and also by potential changes in the number, specialty mix and location of faculty. For example, if primary care delivery sites are increasingly located outside the academic medical center, this could affect the availability of these faculty to teach in "on-campus" clinical experiences. This is another reason for medical schools to consider community sites for clinical training.

As a way to address gaps in training, some managed care organization and other integrated health care systems have introduced specific educational programs for new staff. For example, the Metro Medical Group/Henry Ford Health System has started a Managed Care College, and Harvard Community Health Plan piloted a primary care orientation program for their adult generalist physicians. These activities have costs associated with them, such as lost patient care time. FHP, Inc. estimated a cost of $5000 for each new primary care physician to participate in several workshops (Larsen et al., 1993). In 1994, furthermore, the Institute of Health Care Improvement (IHI) established the IHI Inter Disciplinary Professional Education Collaborative, a three-year commitment to design, implement , and evaluate inter-disciplinary educational experiences in which professionals-in-training will learn together about the continuous improvement of health care (IHI, 1994).

Changes in the Sites Used for Training

The need to move more of clinical education out of the inpatient hospital setting has been cited by many (e.g., Schroeder, 1988), for reasons broader than just the need to prepare physicians for practice in managed care. However, the new environment of medical practice associated with the growth of managed care makes this even more important. Decreasing numbers of patients are being hospitalized, and those in the hospital have shortened lengths of stay and are more seriously ill. This is a stimulus to the increased use of the ambulatory care setting. In addition, the networks that are being set up for patient care can provide useful sites for clinical training, if appropriate arrangements can be made.

There have been calls to use managed care organizations as sites for training both because they fulfill the general need for ambulatory care teaching sites and also because they possess special characteristics, such as providing care to defined populations, emphasizing prevention and cost effective delivery of care, and practicing utilization review. The degree to which managed care organizations are used for medical student and resident teaching is not fully known. This is, in part, due to the difficulty of determining how much teaching occurs in physician practices that are dispersed parts of independent practice associations. It is

likely, however, that medical students who participate in patient care experiences in private physician offices or in group practices are exposed to some proportion of managed care patients, especially in areas of high managed care penetration. Whether these students experience any of the special characteristics of education in more centralized managed care organizations, such as group or staff model HMOs, is not known.

Extent of Training in MCOs

Medical student experiences in group and staff model HMOs are still relatively scarce. A 1994 survey of all 125 U.S. MD-granting medical schools (with a 99 percent response rate) conducted by the Liaison Committee on Medical Education revealed that in 17 schools all students had an experience in an HMO and in 58 schools, some students had such experiences. The types of required experiences included physical diagnosis/clinical skills/introduction to medicine courses, clinical clerkships, and senior selectives (LCME, 1994). These experiences were not limited to the outpatient setting. For example, clinical clerkships included inpatient rotation in HMO hospitals.

The amount of residency education that is occurring in managed care settings also is difficult to quantify because there are a number of arrangements that can occur. For example, managed care organizations can sponsor their own residency training programs. The Kaiser Permanente Medical Centers in Northern California sponsor programs in internal medicine, pediatrics, ENT, obstetrics-gynecology, and pathology. Residency programs may affiliate with MCOs, using them as rotation sites. A medical school also may rotate residents through sites that provide care to patients subscribing to its own HMO. Finally, a multispecialty group practice may sponsor residency programs where trainees see patients from an affiliated or owned HMO (HRSA contract 240-93-0040). There currently are no comprehensive data on the number of residency programs or residents that have educational experiences in MCOs. A 1990 survey by the GHAA that was sent to 481 U.S. HMOs that had been in operation for at least four years had a 58 percent response rate. Of these, 42 (15 percent of respondents) HMOs reported that they were involved in graduate medical education, mostly through an affiliation with a medical school or teaching hospital to serve as a site for an ambulatory rotation. Larger staff and group model HMOs, not for profit plans, and HMOs owned or sponsored by an academic health center were more likely to be involved in the education of residents (Corrigan and Thompson, 1991).

HMOs may be involved in both medical student and resident teaching. For example, the George Washington University School of Medicine has a required ambulatory care clerkship that is taught by full time faculty members associated with the George Washington University Health Plan (a group model HMO), and school of medicine residents rotate through clinics that serve the MCOs enrollees. The Kaiser Foundation Health Plan of Northern California is affiliated with three medical schools and often teaches medical students in required clerkships and in physical diagnosis courses. There are also HMO and affiliated residency programs. An independent family medicine residency program also exists at the Group Health Cooperative of Puget Sound, which is affiliated with the University of Washington for medical student teaching (HRSA contract 240-93-0040). An example of a close organizational linkage between an HMO and a medical school is the formation of an academic department of Ambulatory Care and Prevention within the Harvard Community Health Plan. This resulted in the creation of a "teaching HMO," where students and resident physicians at Harvard Medical School could have experiences in a managed care setting (Moore et al., 1994)

As a way to prepare physicians for managed care practice; fellowships in managed care have begun to be collaboratively developed by managed care organizations and medical schools. US Healthcare has funded fellowships for physicians in conjunction with Thomas Jefferson University and Hahnemann University. GNIS, Inc. and the University of Pennsylvania have announced a fellowship that includes content in health care systems, health services research, epidemiology, biostatistics, and health policy. GNIS, Inc. is involved in the development of decision-support systems.

The specific content of all these educational programs conducted at MCOs, and how well they exploit the unique characteristics of the HMO, is not uniformly known. In some cases, the MCO is perceived as a valuable ambulatory or inpatient teaching site because of its large patient base, not because of its unique characteristics. In some educational experiences in MCOs, medical students and residents tend to learn such things as the cost effective delivery of health care in the context of their patient care experiences, rather than through formal didactic sessions (HRSA contract 240-93-0040). More information is needed about what students and residents actually learn from experiences in MCOs, and whether such experiences produce a better product. In general, individuals who receive their residency training in an MCO and remain to practice are considered to be better prepared than physicians without MCO experience (HRSA contract 240-93-0040).

In addition to affiliations for the purpose of educating students and resident physicians, there also is the possibility of relationships between MCOs and

medical schools for research. The patient data from large MCOs can be valuable for outcomes and health services research. This type of collaboration can increase the availability of research opportunities for primary care physicians, residents and medical students. However, funding for such activities also is jeopardized in the current fiscal environment.

While there are many benefits potentially associated with utilizing community sites such as managed care organizations for medical education, there are some cautions that must be addressed as well. The educational program must retain responsibility for ensuring the quality of educational experiences, and the various sites used for teaching must be willing to participate in evaluation to ensure that quality is maintained. There also must be formal mechanisms set up to facilitate communication between the parent program and the teaching sites to ensure that educational objectives are understood and are being met. Strategies to accomplish these goals include the presence of formal affiliation agreements and the identification of specific individuals at the sites and at the parent program with responsibility for coordination (HRSA contract 240-93-0040).

V. Barriers and Public Funding Opportunities For Educational Change

Finding # 5: There are currently many barriers and few incentives by which health care and teaching institutions can address these problems regarding the physician workforce and medical education.

Barriers

The previous section described how more academic medical centers have been developing linkages with managed care systems both to improve their educational programs and to survive and prosper in the new marketplace. The degree to which this is occurring, however, varies due to a number of factors, including location, institutional goals, and history. While the predicted effects of managed care, such as decreased faculty practice revenues, have not yet generally occurred, they are expected and many schools are planning for these contingencies. Major efforts include attempting to secure a patient base through networking.

In parallel, there is a recognized need to move more of clinical education into ambulatory care settings in the community. This depends upon gaining access to patient care sites which may themselves be under competitive pressure to increase efficiency and cut costs. Managed care organizations are one teaching site whose potential has not been fully developed. These settings, especially group and staff model HMOs, can serve as both generic ambulatory care sites and also provide some specific experiences that can better prepare trainees for their future practice.

MCOs have some incentives to participate in teaching, including recruitment goals, maintaining the interest and enthusiasm of existing staff, and a sense of community responsibility (HRSA contract 240-93-0040). Kirz and Larsen (1986), in a study conducted at the Group Health Cooperative of Puget Sound, determined that the presence of medical students increased interest in practice in three-quarters of staff who participated in teaching and contributed to the professional education of most teaching staff.

However, a number of barriers exist to changing how and where future physicians are educated. Some of these barriers arise from sources external to the medical school, and others are internal. Many are a function of the differing goals and objectives between teaching programs and delivery sites (Moore, 1990). Most financial incentives currently are acting against the expansion of medical education programs into managed care organizations or other community sites.

A major related factor that has been cited as a barrier to education in ambulatory settings is the cost in terms of decreased productivity of physicians who serve as supervisors to students and residents. This is especially important as competition among health care delivery sites increases, requiring enhanced efficiency in providing patient care. There are data from the ambulatory care setting that indicate that more junior residents are associated with lower productivity and higher resource costs while more senior residents enhance the productivity of a practice (Lave, 1989). In one study, the presence of medical students cost about $21,000 in lost revenues for a full time equivalent physicians per full time equivalent medical student in an ambulatory clinic (Garg et al., 1991).

For HMOs, there are little recent data on the costs in lost productivity associated with the presence of trainees. The 1986 study of Kirz and Larsen at Group Health Cooperative of Puget Sound calculated a cost of $16,900 per full time medical student per year. This included students participating in a number of clinical clerkships. Two large group model HMOs reported that the presence of medical students in clerkships decreased physician productivity 25 - 33 percent (HRSA contract 240-93-0040). The basic issues are whether, how and by whom any loss in productivity will be compensated. While faculty supervising residents receive partial or full compensation for the time that they spend supervising residents (Corrigan and Thompson, 1991) medical student teaching often is undertaken on the physician's own time, by scheduling vacation or other uncompensated time (HRSA contract 240-93-0040).

There are few funding mechanisms in settings external to the medical school or teaching hospital, such as family practice centers, community health centers, and managed care settings, to support ambulatory care education for medical students and residents. These types of experiences have often been funded through clinical revenues generated by medical school faculty members, at the school or department levels. If clinical practice income decreases, these experiences could be jeopardized. This is now more critical since community sites are also feeling the competitive pressures to enhance efficiency and to decrease costs. Physicians who were willing to donate time to teach medical students and/or residents are now having to consider how teaching could affect their productivity. This could lead to the need to reimburse physicians who used to donate their time as "volunteer" faculty. A stable source of funding for ambulatory teaching is needed, to encourage this type of experience.

Public Funding Opportunities

The previous findings demonstrate that physicians need to be trained in different numbers, specialties and competencies to function effectively in managed care systems and to meet health care needs of medicare beneficiaries and the public. A substantial amount of public funds, through both Medicare and the Public Health Service, provide direct and indirect support for physician education. In targeting federal funding for medical education, COGME suggests that the nation should attain the following goals:

1. Decrease the number of specialists trained.
2. Modestly increase the number of generalist physicians trained and improve the quality of primary care teaching.
3. Increase minority representation in medicine.
4. Improve physician geographic distribution.
5. Train more physicians in ambulatory and managed care settings.

In considering recommendations to Congress and the DHHS Secretary to invest public funds prudently to produce the needed physician workforce, COGME identified the following principles:

1. Target medical education funding to physician workforce needs.
2. Provide options for budgetary savings that promote physician workforce goals.
3. Simplify and consolidate DHHS medical education financing and minimize regulation and micromanagement.
4. Provide incentives to expand education in primary care, ambulatory, and managed care settings.
5. Assist academic medical centers and teaching hospitals during the difficult transition.

Based upon these goals and principles, COGME summarizes below the relevant DHHS authorities within HCFA and PHS which influence the preparation of physicians. A more complete description of these authorities are contained in COGME's *Seventh Report.*

Medicare GME Policy

Medicare payments to hospitals have, since its inception, included payments for GME. These payments were made under cost reimbursement through 1983. and then, with the establishment of the Prospective Payment System, as discrete payments for "direct" and "indirect" costs of GME (see below). Equivalent kinds of payments have implicitly have been made by other payers, including private insurance and Medicaid.

Although Medicare payments have been critical to the financing of hospital-sponsored GME, its payment mechanism has not kept pace with the increasing advent and spread of ambulatory training other than that carried out directly by hospitals. These funds provide an opportunity to better encourage the training of physicians with the requisite skills for managed care practice. The following section reviews current Medicare law and its impact on the physician workforce as background to providing recommendations for government action.

Under current law, Medicare pays hospitals for GME through two different mechanisms.

Direct GME Costs: Under section 1886(h), Medicare payment for the costs of approved medical residency training programs in medicine, osteopathy, and podiatry are based on a hospital-specific per resident amount (PRA). The PRA is based on a hospital's allowable costs incurred in a base period and updated by changes in the Consumer Price Index-Urban. OBRA 1993 eliminated the inflation update during FY 1994 and 1995 for other than primary care residents and residents in OB-Gyn programs. Section 1886(h)(4)(E) limits GME payments in outpatient settings to instances where the hospital bears the costs of that training program. Residents that are beyond the initial residency period are counted as 0.5 FTE.

Indirect Medical Education (IME) Adjustment: An explicit payment for increased hospital operating costs in institutions with graduate medical education is made as an add-on to the prospective payment rate for inpatient hospital services to cover additional operating costs. Payments increase by approximately 7.7 percent for each 0.1 increase in the ratio of interns and residents per bed. However, this is higher than the analytic estimates of the actual effect of teaching on inpatient costs per case. All residents working in the acute care hospital (including the outpatient department and some hospital-sponsored ambulatory sites are counted. Time spent outside the acute care hospital, such as in managed care settings and community health centers, are not counted.

Risk Contract Payments: Medicare's payment to HMOs is based on the Adjusted Average Per Capita Cost (AAPCC) for Medicare beneficiaries in the fee-for-service sector. The AAPCC includes the additional payments made for both indirect and direct graduate medical education under the Medicare prospective payment system for non-HMO beneficiaries in the geographic region. The HMOs negotiate the prices paid to hospitals for services furnished their enrollees.

Medicare Payments for GME

Table 10 provides estimated Medicare direct and

Table 10 Medicare Direct and Indirect GME Payments 1990-1995 (millions, estimated)

Type of Payment	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
Direct GME	$1,333	$1,420	$1,555	$1,669	$1,768	$1,837
Indirect GME	2,939	3,208	3,582	3,775	4,123	4,537
TOTAL GME	**4,272**	**4,628**	**5,137**	**5,444**	**5,891**	**6,374**

Source: Estimates by the Health Care Financing Administration as of January 1995.

indirect graduate medical education expenditures for 1990-1995:

Medicare GME payment amounts in the above table do not include the amounts implicit in the AAPCC payments to risk-based HMOs, which have been estimated at about $400 million for FY 1995.[1]

Consequences of Medicare GME Policy: There are a number of unintended consequences with current Medicare GME policy. Although consensus is widespread that our nation faces a growing physician surplus, Medicare pays hospitals an average of $70,000 per resident per year for any US or foreign-trained resident they are able to recruit whether or not that resident will be needed in the health care marketplace upon completion of training. Although consensus is widespread that the nation faces a growing budget deficit, current Medicare GME policy provides significant incentives for teaching institutions to increase the supply of residents in training and thus increase Medicare GME outlays. Although consensus is widespread that new physicians should be trained in ambulatory, community and managed care settings to better care for Medicare beneficiaries and the public, both DME and IME payments are based on the number of residents in hospital-based settings. As a result, there is a powerful disincentive to train residents in these essential non-hospital settings. In addition, current AAPCC policy provides disincentives for training in managed care settings.

A major deterrent to training residents outside the hospital is the funding structure for graduate medical education (GME) through Medicare. The direct Medicare GME payments are limited to outpatient settings where the hospital sponsoring the GME program incurs the costs. Similarly, the Medicare indirect medical education adjustment does not include time spent outside the acute care hospital. Therefore, while ambulatory care education in sites within the medical school/academic medical center is supported by current financing mechanisms, utilization of unconnected community sites is not.

In addition, the Medicare HMO capitation rate is not consistent with encouraging participation of managed care organizations in teaching. In certain geographic areas the projected FFS cost and thus the resulting capitation rates paid to Medicare HMOs also included the direct and indirect costs of graduate medical education. Unfortunately, there was no contractual obligation that the HMOs use the funds for this purpose. Furthermore, there is often considerable variation in the Capitation rates in adjacent geographic areas. On the other hand, managed care organizations that are Medicare risk contractors and that wish to develop accredited residency training programs do not receive additional explicit Medicare payments for this purpose. This policy creates a significant disincentive to encourage teaching in managed care settings. A plan for financing Medicare HMOs that considers the mix of patients and that uncouples medical education financing from the capitation rate has yet to be developed.

Targeting Medicare Funding to Meet Physician Workforce Goals: Today, Congress is considering options to reduce Medicare GME payments. The Prospective Payment Assessment Commission (ProPAC) has recommended reduction of the Medicare Indirect Medical Education (IME) adjustment by approximately $500 million in FY 1996 by reducing the IME factor from 7.7 percent per 0.1 intern/resident per bed (IRB) to 6.6 percent. ProPAC further recommended that the percentage ultimately be reduced to its analytically justified level of 4.4 percent, which at today's expenditure levels would generate approximately a $1.5 billion reduction in IME in FY 1996.[2] The Congressional Budget Office's analysis of Medicare's IME payments discussed rates of six and three percent, which would save $930 million and $2.6 billion, respectively, in FY 1996.[3]

COGME recognizes the need to analyze government programs to ensure that program objectives are being met cost-effectively. COGME also recognizes that Congress is considering reductions in Medicare programs to ensure its long-term solvency. In Medicare, it is possible to achieve Medicare savings by simply reducing Medicare expenditures for GME without giving attention to needs for workforce policy changes. However, it is also possible to reduce Medicare expenditures while achieving policy goals.

1 Statement by Ms. Barbara Wynn, Health Care Financing Administration, at the COGME meeting of April 27, 1995.

2 Estimate of $500 million reduction per percentage-point decrease provided by Dr. Stuart Altman, Chairperson, ProPAC, in testimony before the Committee on Ways and Means Health Subcommittee, March 23, 1995.

3 Congressional Budget Office: Reducing the Deficit: Spending and Revenue Options. Report to the Senate and House Committees on the Budget, CBO, February 1995.

This would be a preferable approach, since COGME believes that current Medicare incentives are operating counter to critical public needs for a better prepared physician workforce.

COGME believes that Medicare should limit both direct and indirect GME in ways that encourage a reduction in the numbers of physicians entering the workforce in the future. Support should be guaranteed to each graduate of a US medical school, but should gradually be reduced for graduates of foreign schools. There are three reasons for this policy. First, the rapid growth in the physician supply in recent years is primarily due to increased numbers of international medical graduates (IMGs), while the output of U.S. schools has been relatively constant. Second, projections of physician need in the United States suggest that there will not be work for these additional physicians. Third, expenditure of U.S. tax dollars to train non-U.S. citizens who will not be needed in this country is a poor use of limited Medicare dollars (Medicare IME and DME payments average $70,000 per resident each year).

COGME recognizes that IMG residents are not distributed equally across states or types of training programs, and that national goals achieved through Recommendation 1 could threaten service provision in certain areas and institutions. COGME is particularly concerned about large public hospitals and academic centers in metropolitan areas. We recommend that a transition strategy be developed for these institutions. One component could be an expanded National Health Service Corps loan repayment program to provide physician replacements for the IMG residents eliminated in selected institutions. Another could involve start-up funds to train physician assistants and nurse practitioners specifically as resident replacements in highly impacted areas. Another possibility, designed for the substantial number of institutions with small numbers of primarily IMG residents, is to award transition support for institutions who agree to cease residency training entirely.

Medicare GME policy provides significant disincentives towards primary, ambulatory and managed care education and produce incentives to train physicians in the appropriate specialties and settings to meet Medicare beneficiary and public needs. Despite the acknowledged need to train fewer numbers of specialist physicians and to move training out of the hospital, a recent GAO study estimated that 75% of Medicare GME payments go to specialty training. The rapid growth and popularity in managed health care and Congressional interest in increasing Medicare and Medicaid managed care enrollment makes it essential that more generalist physicians be trained in community-based, managed care settings. Upweighting of both DME and IME is important because the significantly larger payments made under IME will provide greater incentives to change the specialty mix. This payment policy can initially be implemented in a budget neutral fashion.

Downweighting IME payments to 50% for residents beyond the lesser of five years or the time required for initial board certification would provide an important disincentive toward specialty or subspecialty training. Furthermore, it would generate significant budgetary savings. The final recommendation is to ensure that the IME adjustment formula not inadvertently increase as a result of the continued market-driven trend towards hospital downsizing.

Medicare payment policy for risk HMO contractors is carried out through the AAPCC mechanism. AAPCC payments include an estimated $400 million that is based on DME and IME payments, but which are not identified in the AAPCC and which vary according to geographic region. As a result, Medicare GME funds are spread among all risk HMO contractors without being focused on those which actually have teaching programs, or necessarily utilize teaching hospitals for services.

These amounts should removed from the AAPCC and made available for GME in a wide variety of teaching settings, including teaching hospitals, managed care organizations with teaching programs, etc. This would help rectify a possible inequity to teaching hospitals that provide care to Medicare beneficiaries enrolled in risk contract HMOs but currently do not receive Medicare GME on their behalf. It would also eliminate the current disincentives to HMOs who wish to establish or expand residency training activities but do not currently receive explicit reimbursement for their efforts.

As health care increasingly becomes dominated by integrated managed health care systems, graduate training opportunities will change dramatically. COGME believes that both the accrediting bodies and HCFA should encourage the development of arrangements that will undoubtedly provide more diverse and necessary training experiences than currently exist. COGME has previously encouraged the development of medical education consortia or training networks to determine the number and specialty mix of residents, to facilitate the more appropriate utilization of training settings, and to receive and distribute GME funds to whoever bears the training costs, and in a manner that simplifies administration and maximizes flexibility in accomplishing physician workforce goals. Demonstration projects could be utilized to develop such a consortium approach to residency training and GME management.

Physician Education Programs in the Public Health Service

Although spending for medical education by HCFA and PHS differs by orders of magnitude, certain PHS programs (the National Health Service Corps (NHSC) under Title III and Health Professions Education under Title VII) have had a significant impact on the physician workforce. For example, targeted Title VII funding have contributed to a 25% growth since 1980 in the number of Departments of Family Medicine and a 40% growth since 1990 in the number of required student clerkships in family medicine. Building such family medicine teaching capacity has been cited by the GAO to be associated with increased student selection of generalist physician careers.[4] Targeted Title VII funding has contributed to a 200% increased in underrepresented minority enrollment in health professions schools. Today, 3.8 million people who would otherwise lack access are receiving quality primary care from 1,900 NHSC professionals.

A significant number of PHS programs provide institutional and individual incentives to attain COGME's national physician workforce goals. Title VII and the NHSC are perhaps the best known PHS programs that support the following COGME goals to enhance:

- generalist physician training
- minority recruitment
- geographic distribution
- primary care faculty development
- quality of practice

Current law: Title VII of the Public Health Service Act contains 40 authorities or program cycles supporting health professions capacity development. Overall, Title VII provides an estimated $207 million in primary care medical education, multidisciplinary training, minority/disadvantaged training, and student assistance related funding (Table 11). Each of these programs has its own special eligibility and project requirements. Within Title VII, 25 different authorities address aspects of COGME's physician workforce goals. Title VII programs are implemented by the Bureau of Health Professions, of the Health Resources and Services Administration (HRSA).

Another HRSA program, the NHSC, supplies primary health care providers for health professions shortage areas. Through service-obligated and volunteer programs, the NHSC recruits, trains, and places primary care providers in Community and Migrant Health Centers, health care to the homeless programs, federally qualified health centers, health departments, and free-standing private practices that are tied into a health care system. In 1995, the NHSC has a budget of $45 million and a "field" strength of 1,987 health care practitioners. Eighty million dollars were appropriated in 1995 for scholarships and loans which provide incentives for physicians to practice in underserved inner city and rural areas.

Primary care research funding is supported in the Agency for Health Care Policy and Research (AHCPR). In 1995, AHCPR's budget was approximately $157 million. Major budget areas include: (1) research on health care costs, quality and access, (2) the National Medical Expenditure Survey (NMES 3), and (3) medical treatment effectiveness studies. Two percent of the NIH's National Research Service Award's (NRSA) funding is administered by HRSA (1%) and AHCPR (1%) to train primary care researchers.

Targeting PHS Funding to Meet Physician Workforce Goals: Under the Public Health Service Act, Title VII programs, the National Health Service Corps, and primary care research support through the National Research Service Awards (NRSAs) and

Table 11 Physician Education/Primary Care Research Appropriations History (Selected Title III, VII & IX PHS Programs)

Program	Appropriations History (in millions) FY 1993	FY 1994	FY 1995
Primary Care Programs[1]			
Family Medicine Departments & Training	$38.2	$47.2	$47.2
General Internal Medicine/Pediatrics	16.8	16.8	16.7
Physician Assistant Training	4.9	6.6	6.6
Multidisciplinary Training Programs[1]			
Area Health Education Centers	19.8	22.2	24.6
Geriatric Education Centers	10.0	9.2	9.1
Health Education and Training Centers	2.8	2.8	3.7
Rural Health Interdisciplinary Training	4.0	4.0	4.0
Minority/Disadvantaged Health Professions Programs[1]			
Centers of Excellence	23.5	23.5	23.5
Health Careers Opportunity Program	25.0	25.0	26.3
Loans Repayment/Fellowships - Faculty	1.1	1.1	1.0
Student Assistance Programs[1]			
Exceptional Financial Need Scholarships	10.4	10.4	11.1
Financial Assistance for Disadvantaged HP Students	6.2	6.2	6.6
Loans for Disadvantaged Students	7.9	7.9	8.5
Scholarships for Disadvantaged Students	17.1	17.1	18.3
National Research Service Awards			
Bureau of Health Professions	2.6[2]	3.7[2]	3.8[2]
National Health Service Corps Field Program	42.0	44.7	45.0
National Health Service Corps Recruitment Program	73.4	79.3	80.1
Agency for Health Care Policy & Research	122.3	48.6	56.8
TOTAL PHS (Selected Programs)	**$428.0**	**$476.3**	**$492.9**

[1] Title VII PHS Programs
[2] FY 93 & 94 represents actual disbursements. FY 95 represents estimated disbursement.

4 General Accounting Office: Medical Education: Curriculum and Financing Strategies Need to Encourage Primary Care Training. GAO, Report HEHS-95-9, Washington, D.C., 1994.

AHCPR have been critical in achieving COGME's goals of increasing generalist physicians and physician assistants, improving primary care teaching capacity, increasing minority representation, and reducing geographic maldistribution.

Consolidation of Title VII programs is needed for simplification and flexibility of program administration. It will assist in focusing scarce Federal resources on activities that have a demonstrable impact on the production of primary medical care providers and public health workers. Demand is high for generalist physicians and major shortages continue in rural communities and in underserved rural and urban shortage areas.

Specific national goals for Title VII programs, common outcome measures and reporting requirements are essential to the effectiveness and success of these programs in attaining workforce goals. This strategy focuses Federal support upon training activities of known effectiveness in producing needed health care workers and in improving geographic distribution and minority representation.

VI. Recommendations:

With the rapid changes taking place in the health care environment, medical schools, residency programs, teaching hospitals and managed care organizations are encouraged to collaborate and cooperate to produce physicians with in the requisite numbers, specialty mix and competencies to meet patient needs. In addition, public funds for medical education through Medicare and the Public Health Service must be targeted prudently to provide the right incentives in the medical education marketplace (a more complete description of COGME's legislative recommendations are contained in COGME's Seventh Report to Congress and the Secretary).

Medical Schools, Residency Programs, and Teaching Facilities:

1. As medical schools, residency programs and teaching facilities restructure in order to be more competitive in patient care and at the same time preserve their academic mission, they will also need to reassess their roles and responsibilities regarding the physician workforce and medical education.
2. Medical schools, residency programs and teaching facilities should share in the responsibility to train the number and types of physicians appropriate to the nation's needs.
3. Medical schools, residency programs and teaching facilities need to evaluate their institutions and identify deficiencies that are barriers to achieving a more balanced physician workforce, and to train physicians for their future roles. These institutions should:

   a. assure that the process selects applicants who are motivated, have the qualities and abilities, and who can be educated and trained to become the physician workforce which the nation needs;

   b. assure that the curriculum educates students for their future role, including the "new basic sciences" of population-based medicine, epidemiology, and decision analysis; and

   c. assure that the clinical curriculum provides an adequate education in ambulatory and managed care settings, preventive care, team care, and cost-effective patient care.
4. The size, composition and competencies of the full-time faculty at medical schools and residency programs must be reviewed in order to assure that they are appropriate to train physicians for their future roles.
5. Residency programs need to train residents in managed care environments, to review and revise existing residency curricula to ensure that the knowledge, skills and attitudes necessary for future physicians are included, and to adequately prepare both their primary care and specialty graduates for the scope of practice, coordinated relationships, and referral patterns found in managed care organizations.
6. Additional training programs should be developed to meet the needs of the future health care delivery system, e.g. programs for retraining specialist physicians as generalist physicians; and fellowship training to develop physician leadership in managed care environments.
7. Medical schools, residency programs and teaching hospitals need to identify and review their teaching costs, and make their educational programs more efficient.
8. Evaluation at the medical school, residency and continuing medical education levels should incorporate the knowledge, skills and attitudes that will be needed by future physicians, and should be reviewed as medical education and training becomes more decentralized.
9. External certifying and accrediting organizations (e.g. the National Board of Medical Examiners, the National Board of Osteopathic Medical Examiners, the Accreditation Council for Graduate Medical Education, the American Osteopathic Association-Bureau of Professional Education, the Liaison Committee on Medical Education, the Residency Review Committees) need to address the new elements in health care delivery and reassess their structure, policies, and procedures in light of the findings in this report.
10. Medical schools and residency programs (in cooperation with the government and managed care organizations) need to develop an infrastructure in primary care research, and to conduct and support primary care research.

Managed Care Organizations:

1. Managed care organizations need to identify and define their needs as to the number, types and competencies of physicians, and should communicate this information and provide feedback to medical schools and residency programs.
2. Managed care organizations need to work cooperatively and collaboratively with medical schools

and residency programs in developing programs to address the physician workforce and medical education.

3. Managed care organizations (and all other third-party payers) need to share in the cost of paying for medical education, through an all-payer fund, and by developing mechanisms to support and encourage training and evaluation of medical students and residents in their sites. This could include:
   - bonus payments for teaching
   - sponsoring preceptorships and clerkships
   - residency programs in managed care environments or sharing sponsorship of a residency
   - teaching residents about practice management issues
   - collecting data regarding educational and training needs
   - collaborative health services research
   - collaborative development of standards of care
   - developing managed care leadership programs
   - innovative approaches and models of medical education.
4. Managed care organizations should work with external certifying and accrediting organizations to help address the issues identified in this report.

Government:

1. Continue to pay Medicare DME and IME for all residents who are graduates of US medical schools, but gradually reduce DME and IME for international medical graduate residents to 25 percent of the 1995 levels. Establish a transition program to assist institutions providing essential services which are dependent on IMG residents.
2. Upweight both DME and IME to encourage more generalist training and downweight DME and IME to discourage specialist training.
3. Provide both DME and IME payments for teaching in non-hospital settings, including physician offices, community health centers and managed care practices. Funding should follow the resident to his or her site of training.
4. Identify and remove the DME and IME components of the Average Adjusted Per Capita Cost (AAPCC) from Medicare capitation rates and utilize these funds specifically for GME purposes.
5. Create demonstration projects to foster the growth of consortia to manage medical education policy and financing.
6. Reauthorize, at 1995 pre-recision appropriated levels, the National Health Service Corps, Title VII (Health Professions Education), and primary care research funding.
7. Reauthorize the Council on Graduate Medical Education (COGME) to monitor the physician workforce and medical education system given the rapidly changing health care marketplace.
8. The federal government should play a major role in the collection and analysis of data regarding the physician workforce and medical education. This should include current data on staffing patterns in specific organizational forms of managed care (e.g., independent practice associations), information on the cost of medical education (medical students and residents) in ambulatory and managed care settings, and on the differences in the cost of training generalist and non-generalist physicians.

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HRSA-P-DM-95-2