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Primary Care Physicians: Financing Their Graduate Medical Education in Ambulatory Settings

Committee to Study Strategies for Supporting Graduate Medical Education for Primary Care Physicians in Ambulatory Settings, Institute of Medicine

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A Report of a Study by a
Committee of the Institute of Medicine
Division of Health Care Services

National Academy Press
Washington, D.C. 1989

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INSTITUTE OF MEDICINE

COMMITTEE TO STUDY STRATEGIES FOR SUPPORTING GRADUATE MEDICAL EDUCATION FOR PRIMARY CARE PHYSICIANS IN AMBULATORY SETTINGS

DANIEL D. FEDERMAN,* (Chairman), Dean for Students and Alumni, Professor of Medicine, Harvard Medical School, Boston, Massachusetts.

EXALTON A. DELCO, JR., Vice President for Academic Affairs, Austin Community College, Austin, Texas.

HENRY W. FOSTER, JR.,* Professor and Chairman, Department of Obstetrics and Gynecology, Meharry Medical College, Nashville, Tennessee.

JOHN P. GEYMAN,* Professor and Chairman, Department of Family Medicine, University of Washington, Seattle, Washington,

RUTH T. GROSS,* Professor of Pediatrics, Stanford University, Stanford, California.

RUTH S. HANFT,* Research Professor and Health Policy Consultant, Department of Health Services Administration, George Washington University, Washington, D.C.

DAVID A. KINDIG, Professor of Preventive Medicine, Director of Administrative Medicine and Health Services, University of Wisconsin, Madison, Wisconsin.

SHELDON S. KING,* President and Chief Executive Officer, Cedars-Sinai Medical Center, Los Angeles, California.

GORDON T. MOORE, Director of Teaching Programs, Harvard Community Health Plan, Boston, Massachusetts.

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WILBUR B. PITTINGER, Chief Operating Officer, Department of Internal Medicine, University of Michigan Medical Center, Ann Arbor, Michigan.
RICHARD E. RIESELBACH, Associate Dean, University of Wisconsin Medical School, Milwaukee, Wisconsin.
NEAL A VANSELOW,* Chancellor, Tulane University Medical Center, New Orleans, Louisiana.
MICHAEL ZUBKOFF,* Professor and Chairman, Department of Community and Family Medicine, Dartmouth Medical School, Hanover, New Hampshire.

INSTITUTE OF MEDICINE STAFF

JESSICA TOWNSEND, Study Director
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DEE SUTTON, Senior Secretary
WALLACE WATERFALL, Editor

* Member, Institute of Medicine

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Summary

This report is the result of a study by a committee of the Institute of Medicine charged with developing strategies to overcome barriers to financing graduate medical education (GME) for primary care practitioners in ambulatory settings. Current systems of financing make it difficult to prepare physicians adequately for the special demands of primary care practice. Such physicians must be prepared to confront a wide array of problems, provide coordination of health care services, respond to community health needs, and perform many other functions that may take place in settings ranging from solo practice to health maintenance organizations. Because of recent changes in the health care system, the hospital is a less suitable principal focus for the GME experience of primary care physicians than the ambulatory setting in which most of the physician's career will be spent. However, because payments for health services and for GME are skewed to favor inpatient and specialty education it is hard for educators to increase the time that residents spend in primary care outpatient settings.

Although there are signs that primary care education programs are responding to changes in the location of medical care and in the nature of hospital care by increasing the emphasis on outpatient experience, such adaptation has been slow. One of the reasons posed for the failure of the programs to initiate the needed move to primary care outpatient settings is the difficulty in financing such training. The committee interpreted its charge as generating recommendations that would immediately start to diminish existing financial barriers.[1]

The centerpiece of this study was a workshop, held in Washington D.C., April 18 and 19, 1989, to which were invited leaders in the three primary care specialties of general internal medicine, general pediatrics and family medicine. Experts in medical education financing, hospital administration, academic administration, policy analysis, and the insurance industry were also invited. The presentations and discussion at the workshop, together with four papers commissioned by the committee formed the basis of the committee's deliberations.

[1] For the purposes of this study general internal medicine, general pediatrics, and family practice are the primary care specialties. The committee's recommendations are intended to encourage programs that emphasize primary care and ambulatory training. Unfortunately, not all programs fit this description.

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Because the charge to the committee was to try to lower financial barriers, and because of severe time constraints, the committee did not conduct independent evaluations of some important financial and non-financial issues that play a major role in shaping the training of primary care physicians. These include the role of Residency Review Committees in shaping the residency training experience, the extent to which the process of accreditation of education programs assures that "essentials" (the educational requirements for accredited residency training programs that are approved by a Residency Review Committee of the specialty) are fulfilled, the problems residency programs confront as they seek to implement changes in essentials, what needs to be done to enhance the quality of the training experience in different ambulatory settings, and to what extent, if any, residency programs may be closing because of fiscal problems. In addition, the committee did not address in depth ways of reducing teaching costs and increasing resident's practice revenues. A number of questions have been raised about the quality and content of ambulatory training and the funding of specific elements of education such as the teaching of behavioral sciences and epidemiology. These important questions, which bear on the development of quality education programs in primary care, are subjects worthy of investigation which could not be undertaken by the committee. Moreover, the committee did not undertake an investigation of the organizational structure of medical schools and hospitals. An attempt to initiate long term, radical change in the way in which GME is conducted and financed would require fundamental reorganization of these institutions. However, the concern of the committee was to initiate immediate movement in constructive directions.

PROBLEMS IN FINANCING GME FOR PRIMARY CARE PHYSICIANS IN AMBULATORY SETTINGS

The committee reviewed the literature and available data about the costs of training in ambulatory settings and the revenues available to those trying to ensure appropriate ambulatory training experiences for primary care residents.

Two major questions arise when considering the costs of shifting residency training to ambulatory settings. First, what is the cost of training in ambulatory settings compared with the cost of training in inpatient settings? Second, what, if anything, is the net cost to the site or program? Few attempts have been made to answer the first question. There are, however, indications that teaching in ambulatory settings is less efficient than in inpatient settings. For example, in hospitals it is possible to schedule rounds to bring faculty and residents together. In ambulatory care the teacher cannot bring large groups of residents to a patient, and the patient cannot be asked to wait for the convenience of the teaching experience. Another factor thought to contribute to higher costs in ambulatory

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settings is the need for additional space to accommodate teaching in a facility that is usually designed for economical use of space for patient care only. In a hospital residents are more easily accommodated without additional or dedicated space.

On the second question—whether the training site or program will experience net costs as a result of the ambulatory training—there is some evidence that revenues will not cover costs of first-year residents, but may do so for second and third-year residents. Finally, there are indications that both ambulatory training sites and inpatient training sites experience increased indirect costs from providing the training experience. For instance, the test-ordering behavior of residents is more costly than that of other physicians.

Patient care revenue is today the major source of support for graduate medical education. Support that is specifically tied to GME comes from several sources. A principal payer is Medicare, which pays approximately $1 billion annually to hospitals for the direct costs of resident and faculty salaries and benefits, and approximately $2 billion for the indirect education adjustment which pays for costs associated with teaching activities. States play a major but uneven role in financing GME. For example, states sometimes support private medical schools, state-owned hospitals and certain residencies—most often in family medicine in states that perceive a need to enhance their supply of those practitioners. Special federal funds for GME in primary care are also available from Title VII of the Public Health Service Act. These are grants to primary care training programs—family practice, general internal medicine, and general pediatrics—that require residents to spend at least 25 percent of their time in continuity practice in ambulatory settings.

Revenues for GME for primary care physicians in ambulatory settings suffer from several disadvantages compared with revenues for inpatient training and training for other specialties: third-party coverage is more constrained, outpatient payment levels are lower, and copayments and deductibles are higher. Thus it is harder to offset the costs of teaching through patient care income. Although Medicare has reduced the differential between inpatient and outpatient training in its GME payments, a discrepancy still exists: residents in clinics that the hospital does not itself operate are excluded from the calculation for the indirect medical education adjustment.

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ADDITIONAL BENEFITS FROM IMPROVING SUPPORT FOR PRIMARY CARE GME

Two important aspects of primary care that are affected by GME financing are the supply of primary care physician manpower and care for medically indigent populations. The manpower issue focuses on whether the future supply of primary care physicians will be sufficient to meet the nation's requirements, or whether efforts should be made to increase the number of medical school graduates choosing careers in primary care. The committee reviewed attempts to estimate the adequacy of the future supply of primary care physicians, and indicators of change in the supply of primary care physicians such as the number of medical school graduates selecting primary care specialties. Although projections of both the supply of and need for medical manpower contain much uncertainty, the committee concluded that if measures to improve support of GME in primary care settings would at the same time increase the number of individuals going into primary care, a double benefit would accrue: training would be improved and there would be some correction in the current imbalance between oversupplied specialties and the primary care specialties for which there are possibilities of undersupply.

The issue of care for medically indigent people converges with issues in financing GME for primary care in several ways. Teaching hospitals provide a disproportionate amount of uncompensated care. Often the presence of residents in those hospitals is essential if the provision of such care is to continue. In addition, some of those hospitals are experiencing serious erosion of their margins. Changes in payments for medical education that reduce revenues of teaching hospitals could diminish the provision of uncompensated care. However, primary care training in ambulatory sites, which also provide substantial amounts of uncompensated care, can help lighten the burden on hospitals by providing timely preventive care. In addition, there are examples of arrangements between local or state agencies and primary care training sites whereby an agency has funded care for medically indigent people at the site and thus at the same time helped support training.

COMMITTEE CONCLUSIONS AND RECOMMENDATIONS

It is the committee's judgement that the care provided by future generations of primary care physicians would be enhanced if the GME experience placed greater emphasis on training in primary care outpatient settings. Current payment systems make it difficult to accomplish the needed shift. The committee also concluded that the wide variety of primary care teaching programs and of

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existing and potential sites for outpatient training means that no single approach to overcoming financial barriers will solve the financing problems of all primary care programs. The committee developed recommendations for improving the ability of education programs and health care providers to support GME for primary care physicians in ambulatory settings. These recommendations are intended to encourage several different entities to act decisively and expeditiously. Entities to whom the committee addresses recommendations include federal, state, and local governments, hospitals, and private foundations. This dispersion of responsibility for making needed changes reflects the committee's belief that GME is of benefit to, and is correctly the concern of, numerous participants in the health care system.

The committee developed its recommendations bearing in mind four major considerations. First, the goal is to improve the quality of primary care GME both by increasing the time spent in ambulatory setting and increasing the number of sites that closely resemble primary care practice conditions. Second, the recommendations should immediately start to move the policy process in appropriate directions, acknowledging that GME financing issues will not be completely solved without more radical restructuring of revenue flows and hospital financial incentives. Third, two secondary goals should be fostered: expanding the primary care physician workforce and sustaining or enhancing access to care for medically indigent people. Fourth, the recommendations are made in the expectation that no major new federal financing for GME will soon be available.

Physician Payment Reform

The committee noted that increasing payment for primary care services would have the mutually reinforcing effect of enhancing the revenues of primary care training sites and making a career in primary care more attractive by increasing its earning potential.

A resource-based relative value scale (RBRVS) has been proposed as the basis for Medicare physician payment. Under this system payment is based on the costs of the resources (including time) used to provide a unit of service. RBRVS payment would redistribute income among physicians so that primary care specialists would increase their income; surgical and more procedurally oriented specialists would experience reduced income.

The committee supports the proposal that Medicare adopt a resource-based relative value scale method of payment for physicians, and recommends that all payers adopt such a payment method.

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Under RBRVS payment the financing of primary care GME in ambulatory settings would be facilitated by an increase in patient care revenues; the improved earnings ability of primary care faculty would increase the ability of faculty practice plans to support teaching physicians; and the economic incentives that deter some physicians from entering primary care would be diminished.

Medicare Direct Graduate Medical Education Payment

Proposed rules for Medicare payment for the direct costs of graduate medical education introduce a weighting factor that diminishes payments for residents who have passed the initial residency period (board eligibility plus one year, the total not to exceed five years). The committee suggests building on this precedent by which Medicare GME payment can influence physician supply.

The committee recommends an adjustment to the Medicare payment for the direct costs of GME that would create an incentive to establish residencies in primary care and to place those residents in primary care ambulatory settings. The mechanism should be a differential in the full-time equivalent calculation between primary care residents and other residents. Residents in general internal medicine, general pediatrics, and family medicine should receive a higher weighting factor than other residents. Primary care residents who spend 25 percent or more of their time in a primary care ambulatory setting (not including specialty clinics) should receive a larger weighting factor.

The suggested incentive both would make the provision of primary care residencies more attractive to hospitals, and generate revenues needed for the development of quality training programs in community practice sites. It is reasonable to offer extra support to needed specialties by directing small amounts of resources away from those that are better financed and for which the supply is considered to be more than adequate.

Medicare Indirect Graduate Medical Education Adjustment

Evidence suggests that the outpatient sites of residency training have costs associated with teaching activities similar to those recognized by the Medicare indirect medical education teaching adjustment.

The committee recommends that Medicare include in the calculation of the indirect medical education adjustment time spent by primary care residents in all primary care ambulatory settings.

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By extending the Medicare indirect medical education payment to all primary care sites additional money will become available to help support the costs of training in primary care outpatient sites.

Since Medicare's indirect GME payment is a recognition of the costs of education it is appropriate that hospitals use some of this revenue to support the primary care ambulatory services that are an essential cost of training primary care physicians.

The committee urges hospitals to commit a portion of the revenue from the Medicare indirect GME adjustment to direct financing of services at community-based ambulatory sites used for training primary care physicians.

State and Local Roles

Case studies indicate that state capitation payments contribute significantly to the ability of funded primary care residencies to support primary care ambulatory residencies. States should continue this important role, especially where significant shortages of primary care practitioners are predicted.

The committee recommends that states assess their need for primary care physicians, bearing in mind the special roles of these physicians. States that determine that an increased supply of primary care physicians would benefit their citizens, and states that find a potential shortage of primary care practitioners, should increase their financial support of GME and widen their support to include general internal medicine and general pediatrics as well as family medicine.

States making judgments about the need for primary care physicians should be cognizant of the differences in care provided by primary care specialists and other physicians—noting the potential for the provision of cost-effective care that these physicians represent.

Medicaid programs can also help enable primary care ambulatory training to remain financially sound. ***The committee encourages Medicaid programs that do not now support GME to follow Medicare GME payment policies.***

Primary care sites of residency training can sometimes help state and local governments solve problems of health care for medically indigent populations by

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providing cost-effective, appropriate services. The training sites benefit from the additional revenues generated by state or local support of this activity.

The committee recommends that primary care GME programs assume the responsibility for informing legislators and agencies of ways in which primary care ambulatory GME could provide services that would benefit needy populations as well as the education programs. The programs should also make efforts to ensure continued support by maintaining contact with the relevant agencies and legislators through such means as newsletters.

Grants

Because of insecure funding, grants should not be regarded as a source of protracted operating support. However, grants can have an important catalytic role in the initial development of ambulatory sites, supporting innovative educational arrangements, enabling creative financial arrangements to be developed, and helping develop the faculty needed to initiate a quality program.

The committee recommends that the funds available through Title VII of the Public Health Service Act be directed to the development of innovative model programs and demonstration sites from which others can learn of new ways of arranging and supporting quality primary care ambulatory training programs. In addition these grant programs can continue to play a role in faculty development during the early years of programs. Private foundations, both local and national, interested in medical education and the provision of health services, should add their support to such activities thus multiplying the benefit of the limited federal grants funds that are available.

Academic Leadership

The success of committed leaders in overcoming financial barriers and establishing innovative arrangements for training primary care residents in ambulatory settings underscores the importance of academic leadership. These leaders also have a key part to play in developing the professional values that will encourage young physicians to enter primary care specialties. ***The committee encourages deans and faculty members to emphasize the importance of ambulatory training, and urges the implementation of academic systems that reward those who provide role models for future generations of primary care physicians and devote time to developing the curricula and***

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teaching skills needed to make training in ambulatory settings a useful and positive experience.

Efficient Use of Training Resources

The committee was convinced that the efficiency with which training sites are operated makes a significant difference in the financial health of the training program. ***The committee believes that budgeting and planning for primary care ambulatory training sites should take into account the need to develop effective clinic management. In addition, to the extent that economies of scale can be achieved by the use across specialty lines of facilities and other resources, these cost savings should be sought and interspecialty barriers lowered.***

In conclusion, believing that quick action is needed to ensure the future supply of appropriately trained primary care physicians, the committee developed the foregoing recommendations for ways of improving the ability of education programs and health care providers to support GME for primary care physicians in ambulatory settings. The committee's recommendations address numerous participants in the health care system. However, the recommendations are not addressed to all those whose influence could appropriately be brought to bear on the problem, nor do the recommendations cover all possible solutions. Rather, the recommendations are intended as first, immediate, steps in a direction that the committee believes must be pursued.

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Introduction

This report by an Institute of Medicine committee results from a widely held belief that the current system of financing graduate medical education impedes efforts by medical educators to prepare primary care physicians to be effective and efficient in today's health care delivery system. The premise is that increasing the quantity and quality of ambulatory training of primary care residents could have a major impact on the quality and efficiency of care that a primary care physician delivers during 40 or so years of professional life.

Educators recently have come to appreciate that the present financing system is a barrier to reshaping the education of residents to enable them to meet the realities of modern primary care practice. These realities include the management of patients in a health care system that is responding to new financial incentives by increasing the practice of medicine outside the hospital; technological developments that allow the movement of care to outpatient settings; changes in demographics and disease patterns that make new demands on primary care physicians; and efforts to contain health care cost increases that require primary care physicians to play central roles in decisions about access to services.

The Institute of Medicine received support from The Josiah Macy, Jr. Foundation and the Health Resources and Services Administration of the Public Health Service. A committee of 13 members was appointed to conduct the study. A major component of the study was an invitational workshop which provided the foundation for the committee's deliberations and recommendations.

SCOPE OF THE STUDY

Because of the ways in which health care services and medical education are financed, educators trying to provide primary care residents with training in appropriate ambulatory care settings face financial barriers. These barriers are more severe than those faced by other specialties or by training in inpatient settings. The task for the committee was to develop ways of starting to overcome the financial barriers by enhancing the support of graduate medical education in ambulatory settings for primary care physicians. To accomplish this objective the committee was to identify fiscal constraints on primary care graduate medical education and identify potential resources and mechanisms for support, which might include federal state and local governments, institutional resources, and the private insurance industry.

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Those concerned with primary care specialties have approached the topic from different viewpoints (see for example Millis, J.S. 1966; Institute of Medicine, 1978; U.S. Department of Health and Human Services, 1987; Wartman, 1988; Gastel and Rogers, 1989). There has been interest in elucidating what the nation wants of its primary care practitioners in terms of the sorts of services they provide and the health care needs of the nation's population that they address. There has been interest in ensuring that physicians are trained in the skills needed to provide appropriate care and there has been interest in ensuring that a sufficient number of primary care physicians are available and are geographically distributed to meet the needs of the local populations.

A well-conceived manpower policy must be based on an understanding of all of these aspects of primary care. This committee, however, had a narrower charge. It was asked to develop recommendations for policy changes that would improve the support of graduate medical education (GME) for primary care physicians in appropriate ambulatory settings. On the premises that there is a problem in the financing of primary care GME; that residency training in ambulatory settings is particularly disadvantaged; and that because of these factors a needed shift of training to ambulatory settings is inhibited, the committee was asked to identify fiscal resources and fiscal constraints on the funding of the ambulatory parts of primary care residencies. The committee was also asked to recommend strategies for overcoming the fiscal constraints that are resulting in insufficient use of primary care outpatient training sites.

However, the committee recognized that it could not treat the question of support of GME in isolation from other issues. In particular, the issue of the supply of primary care manpower cannot be divorced from the issue of GME financing because patient care revenues have an impact on both the number of entrants into the primary care specialties, and the ability to support residents in ambulatory settings. The committee examined evidence concerning the adequacy of the future supply of primary care physicians and adopted the policy goal of expanding the primary care physician workforce. Therefore, while support of primary care GME in ambulatory settings remained the focus of the study, the committee approached solutions to the problems bearing in mind that a double benefit would accrue if strategies that enhance GME funding would at the same time help attract additional physicians into primary care practice.

The committee also had to define the scope of the study in terms of the specialties that constitute primary care. The question of what constitutes primary care has been the subject of considerable discussion. An IOM committee attempting to define primary care in 1978 reviewed 38 definitions used by various groups or individuals (Institute of Medicine, 1978). Undoubtedly the last decade has added to the number. However, for the purposes of this study, which focuses

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on the training of primary care physicians in ambulatory settings, the important attributes of primary care are: that it is a major entry point into the health system; that it is to a great extent provided in outpatient settings; that the primary care practitioner determines the need for, and facilitates referral to, other health care providers and community services while providing continuity in the patient's care. Committee members recognized the significant contribution of osteopathic physicians to primary care, and recognized the problems confronted by this branch of medicine in supporting primary care residencies. Some solutions proposed in this study have potential for easing the problems of osteopathic graduate medical education. The committee gave serious consideration to the inclusion of obstetrics and gynecology in the definition of primary care specialties. While acknowledging the major role played by obstetricians and gynecologists in the delivery of primary care services to women, the committee believed that it should concentrate on the three specialties of general internal medicine, general pediatrics, and family practice for which a commonality of problems in the financing of GME are found, and which are federally defined as primary care specialties and receive support from federal grants programs intended to enhance primary care.

CONDUCT OF THE STUDY

During the course of the study the committee held two meetings. The principal activity of the first meeting was to develop the program for a workshop. At the second meeting the workshop took place and the committee developed its recommendations.

The workshop performed a dual function. First, the information derived from the workshop provided the basis for the deliberations and recommendations of the committee. Second, the workshop provided a meeting ground for an exchange among leaders in the three primary care specialties, program directors, department chairmen, hospital executives, financing experts, and government officials (See Appendix A for the workshop program). Approximately 50 people participated in the workshop.

In addition, the committee commissioned background papers to provide in-depth analyses of topics of particular interest. These papers are Appendix B.

Given the focus of its charge and severe time constraints the committee did not conduct independent evaluations of some important financial and non-financial issues that play a major role in shaping the training of primary care physicians. These include the role of the Residency Review Committees in shaping the residency training experience, the extent to which the process of accreditation of

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education programs assures that "essentials" (the educational requirements for accredited residency training programs that are approved by a Residency Review Committee of the specialty) are fulfilled, the problems residency programs confront as they seek to implement changes in essentials, what needs to be done to enhance the quality of the training experience in different ambulatory settings, and to what extent, if any, residency programs may be closing because of financial problems. In addition, the committee did not address in depth ways of reducing teaching costs and increasing practice revenues. A number of questions have been raised about the quality and content of ambulatory training and the funding of specific elements of education such as the teaching of behavioral sciences and epidemiology. These important questions, which bear on the development of quality education programs in primary care, are subjects worthy of investigation but could not be undertaken by the committee. Moreover, the committee did not undertake an investigation of the organizational structure of medical schools and hospitals. An attempt to initiate long term, radical change in the way in which GME is conducted and financed would require some fundamental reorganization of these institutions. However, the concern of the committee was to initiate immediate movement in constructive directions.

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Chapter 1

Concerns about Primary Care Residency Training

This chapter outlines some of the concerns about the production of primary care physicians to meet the nation's future requirements. Included are discussions of primary care manpower and the interactions between the provision of indigent care and the financing of primary care residencies. Although the content of primary care residency training is not the focus of these last two topics, they are discussed here because they are topics of national importance that can be influenced by the financing of primary care residencies.

NEW DIRECTIONS FOR PRIMARY CARE RESIDENCIES

The education of primary care physicians being prepared to work in the late twentieth and early twenty-first century must respond to changes that have occurred and are occurring in the organization and delivery of health care. The following sections outline some of those changes and the extent to which GME for primary care physicians has adapted.

Why is There a Need to Increase Ambulatory GME?

Changes in the content of inpatient and outpatient care, and in the roles that primary care physicians are called upon to play, have made the inpatient hospital setting less appropriate as the principal site for primary care education. These changes and why they are important can be summarized briefly:

- For a number of reasons, including technological changes, economic incentives, and decreased length of stay, hospital patients are sicker than they used to be. Therefore the inpatient educational experience is becoming increasingly narrow, and the inpatients seen by primary care residents are less like those they will encounter in their practices.
- The length of hospital stay has decreased. As a result inpatient residencies do not provide an ongoing interaction between resident and patient, nor are residents able to participate in the diagnosis or post-operative care of patients to any great extent. Residents on inpatient service also have little chance to view the full course of disease.

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- Key patient decisions and interactions between patients and physicians, such as those that involve consideration of life-style or behavioral aspects of care increasingly occur in the ambulatory care setting.
- The range of disease seen in inpatient settings has decreased as the ability to manage disease without hospital admission has increased.

The crux of the problem is described by Rueben et al. (1988) who state that the mismatch between education and clinical practice can result in suboptimal preparation of primary care physicians for patient care. Much of the residency experience involves patients with end-stage diseases complicated by co-morbid chronic conditions, with care taking place in a setting where speed and efficiency are at a premium. This compares with a practice setting in which the physician is generally alone with the patient, where the physician must establish trust lest the patient disregard advice or fail to return, and where the range of diseases and ailments encountered will be substantially different from those encountered in the inpatient setting. In addition, the primary care physician should be particularly well-versed in the behavioral sciences and epidemiology in order to understand the complex interactions of patients with their environments. A primary care physician should also be familiar with local agencies that can offer assistance to patients.

The Match Between Training and Practice Sites

The importance of ambulatory care and the role of primary care physicians can easily get lost in today's high technology, specialty oriented approach to care. It is also easy to forget that the primary care practitioner is likely to deal with a different range of problems than other specialists, and than physicians in specialties and subspecialties that are hospital based. In addition, the primary care practitioner most often practices outside the hospital, in a physician's office. The ambulatory care workload of primary care specialists is illustrated by data from the National Ambulatory Care Survey. This survey of 2,000 office-based non-governmental physicians, collects data about the ambulatory patients encountered during a randomly selected study week. Regarding the patient problems seen in ambulatory practice, 15 diagnostic clusters in 1978 accounted for 50 percent of the half billion annual ambulatory care visits. General and family physicians, general internists, and pediatricians together provided well over 50 percent of outpatient visits for these diagnostic clusters (Rosenblatt et al., 1983). Figure 1.1 illustrates the nature of the primary care ambulatory practice and the emphasis on conditions that are usually not seen in the inpatient setting. Although the composition of primary care ambulatory visits may have shown some change in the past decade, it seems reasonable to conclude that primary care

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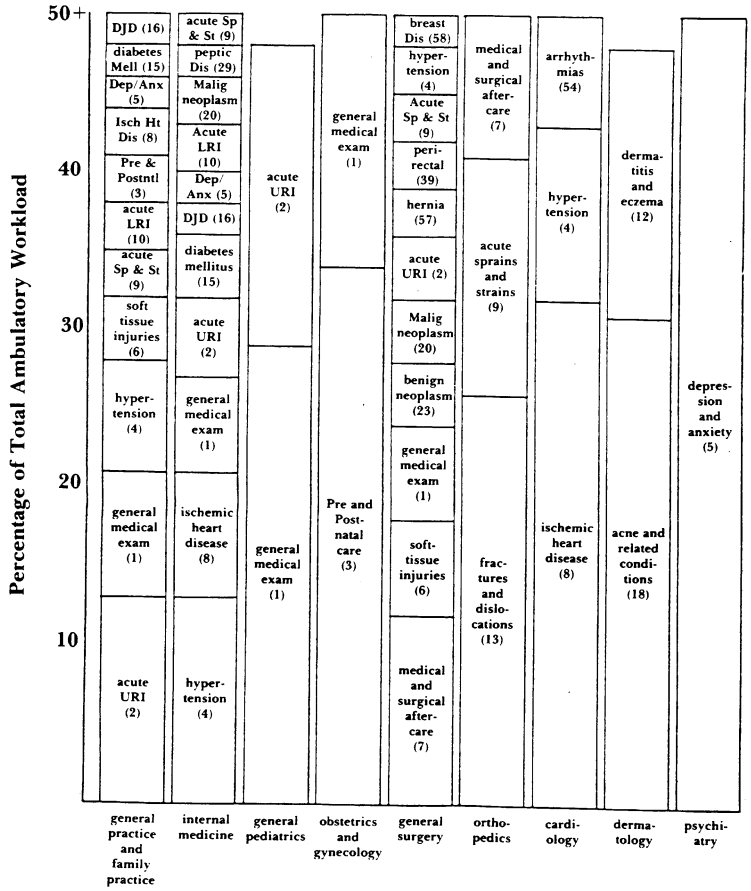

Figure 1.1 Diagnosic Clusters Accounting for the Majority of Ambulatory Visits to U.S. Physicians in Selected Specialties in 1977 and 1978.
Source: Rosenblatt, Roger A., and Daniel C. Cherkin, Ronald Schneeweiss and L. Gary Hart. 1983. The Content of Ambulatory Medical Care in the United States. The New England Journal of Medicine. 309(15):892–897.
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physicians still provide the majority of care for these 15 diagnostic clusters, and that these clusters still represent a substantial portion of primary care practice. Certainly the primary care experience differs radically from the inpatient experience, where admissions increasingly are for specific, invasive procedures.

To the extent that it is desirable that the settings and experiences of residency training replicate those that will be found in practice, it is clear that not all ambulatory settings are of equal quality. The primary care practitioner most often practices in a physician's office—a site that is underemphasized in today's training. By one estimate, family practice residents spend roughly 40 percent of their time on inpatient services, 30 percent in ambulatory clinics including those of other specialties such as dermatology and ophthalmology, and 30 percent of their residency time in continuity practice where the residents provide primary care for families over an extended period of time and follow patients who are admitted to the hospital (Colwill, 1989). Many sites that are used for ambulatory care training of primary care residents do not meet the description of the recently approved Special Requirements for Residency Training Programs in Internal Medicine, which state that "the conditions under which ambulatory patients are managed should be similar to those of office practice" (Accreditation Council for Graduate Medical Education, 1988).

The Association of Program Directors in Internal Medicine (1987) investigated both the duration and sites of ambulatory care experiences of internal medicine residents in 1985. Ninety-five percent of the programs surveyed stated that residents had at least two years with continuity experience. For more than 95 percent of these programs the experience consisted of a half day per week. For most residents this experience was in hospital service clinics which differ in many ways from office based experience. The indigent case load is high and advanced disease and multiple conditions are more frequently observed; patients are likely to show evidence of a poor socio-economic environment. Few internal medicine residents spent much time in office-style settings. Only 11 percent of programs offered experience in HMOs and 40 percent offered experience in private offices. Moreover, of those programs that offered these sites only 4.1 percent and 14.9 percent of residents respectively trained there. In addition, only 22.6 percent of programs indicated that they also offered ambulatory care block time—an experience that is not interrupted by inpatient duty. Furthermore, despite suggestions that more time be devoted to ambulatory care, change appears to be slow. Data from the National Study of Internal Medicine Manpower (which surveys all accredited internal medicine programs), indicate that between 1976 and 1987 no significant change took place in the proportion of residency time devoted to ambulatory care. However, over that period the site of ambulatory training shifted, with an increase in training away from the hospital campus (Anderson et al., 1989). One indication that the slow rate of change is due in part to the

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difficulties in financing and in coping with logistical problems is found in the reaction to a proposal by the Residency Review Committee in Internal Medicine. In 1988 the committee proposed special requirements for internal medicine training that mandated a minimum of 25 percent of the three-year training program be spent in ambulatory settings. Despite support from such groups as the Association of Program Directors in Internal Medicine, and a general acknowledgement that the change is necessary, the difficulties in implementing the change are enormous. Cost and logistical problems are causing programs to request, at least, a delay in implementation (Cohen, 1989).

The pediatric residency experience resembles internal medicine in its lack of similarity to subsequent practice (Schroeder et al., 1986). Charney (1989) notes that a considerable amount of the pediatric resident's ambulatory experience is in acute illness clinics or emergency departments. The climate in an emergency room is in many respects unlike a primary care setting: patients are not likely to be known to the physician, there is little ability to observe over time, and there is pressure to make swift diagnoses. The sites for continuity experience are also criticized. Charney surmises that one of the problems with the continuity clinic is that it is an artificial construct, designed for teaching purposes, where residents do not observe role models for future practice. Better experiences can sometimes be found in neighborhood health centers and private offices. However, only about 30 percent of pediatric residents spend time in those settings.

Thus, despite mounting concern about the amount of ambulatory care training, and the quality of training in the most frequently used ambulatory care sites, change has been slow to occur. The ways in which current financing mechanisms make the transition difficult is the subject of Chapter 2.

Primary Care Physicians and Cost Containment

The concept of the physician as gatekeeper—a designated health professional who serves as the patient's primary physician and refers patients to specialist services, as needed—is not new (Somers, 1983). Today the emphasis is on the role of the primary care physician as a gatekeeper or case manager, often in managed care systems, with responsibility for balancing cost and quality considerations and ensuring that patients receive good, cost effective, care.

The question of whether primary care physicians are the most appropriate gatekeepers was answered in the affirmative by Somers (1983), with limitations. In some circumstances a subspecialist might be appropriate—for instance for a patient with end-stage-renal disease the nephrologist might function as gatekeeper. In practice it appears that, at least in HMOs, primary care physicians do perform

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the gatekeeper role. Of 91 HMOs that responded to a survey and used patient care managers/gatekeepers, 79 percent always used physicians for that function. Family practice, internal medicine, and pediatrics were the three most frequently used specialties (American Medical Care and Review Association, 1988).

In addition to these formal roles, primary care physicians can play major roles in containing health care costs in less formal ways. Even in traditional solo practice or group fee-for-service practices, the primary care physician makes decisions concerning testing and referral that have major cost implications. In addition, some of the attributes emphasized in primary care, such as preventive care, health education and counseling are thought to be useful in forestalling more costly episodes of illness. Eisenberg (1986) reviewed the literature on differences in behavior among specialties. He notes that, in general, the literature suggests that the more specialized physicians provide more intensive care than do generalists even when controlling for case mix and severity. Eisenberg also notes that residents learn decision-making styles during their residency training. Thus, the nature of the residency experience can be a powerful influence on the ability of the physician to provide cost effective care—an ability that is increasingly valuable in today's environment. As one examination of the need for teaching in the ambulatory setting noted, organized forms of medical care find that the more tightly they control care to emphasize primary care, the more likely they are to be financially viable. Therefore primary care physicians, even more than other physicians, need clinical training in ambulatory-care settings (Perkoff, 1986).

OTHER POLICY ISSUES RELATING TO FINANCING PRIMARY CARE GME

The following sections discuss two areas that may be affected by changes in the support of GME for primary care physicians—the supply of primary care physicians and access to care for indigent people.

Primary Care ManPower Two issues in primary care manpower are pertinent to the committee's deliberations. The first is whether the educational system is producing enough primary care physicians to meet the nation's needs, or to put it another way, whether the proportion of primary care physicians and specialists being produced matches future needs. The second issue is linked to the answer to the first. If there is a desire to sustain the rate of production of primary care physicians, or perhaps increase the rate of production, will a sufficient number of physicians choose primary care specialties and fill available residency slots?

The question of the balance between the demand for and supply of physicians has been debated for a long time. Major uncertainties result from difficulties in

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estimating demand, which is affected by many variables such as health care financing, the organization of services, technological change, disease patterns, demographics, and economics. The supply of physicians is theoretically easier to project, yet it too is fraught with difficulties, as evidenced by the recent debate about the supply, as well as the demand, forecasts of the Graduate Medical Education Advisory Council.

Also debatable is the appropriate supply of primary care physicians. Such groups as a 1978 Institute of Medicine committee have affirmed the key role of primary care physicians in the nation's health care system (Institute of Medicine, 1978). The limited data that are available contain elements that are causing concern about the adequacy of the future supply of primary care physicians. A major study for the Federated Council for Internal Medicine (1987) found that although there will be a slight excess of internal medicine physicians through 2020, there will be shortages of general internists. Taking into account such variables as the ratio of physicians to population, the Council on Graduate Medical Education (COGME) concluded that there is a current or impending undersupply of family practice and general internal medicine physicians, but there is likely to be an oversupply of pediatricians. However, COGME points out that its conclusion is based on an assumption of no change in the demand for pediatric services, which may be invalid; adolescent morbidities are increasing and between 12 and 16 million children are uninsured. Expansion of insurance coverage would cause a major increase in demand for pediatric services (Council on Graduate Medical Education, 1988). Table 1.1 indicates that between 1981 and 1987 the three specialties with which this report is concerned — general internal medicine, general pediatrics, and family medicine — experienced growth rates close to, or substantially in excess of, the growth rate of all physicians. However, in 1987, these three groups together represented less than 26 percent of all active physicians. Table 1.2 shows the projections to the year 2020 of the Bureau of Health Professions, indicating that in future years the three primary care specialties together are expected to grow at a slower rate than the supply of all physicians. The Bureau attributes the slow rate of growth in part to loss of older physicians who will not be replaced in sufficient numbers (Department of Health and Human Services, 1988).

Growth in the supply of primary care physicians in the near future must come from the pool of physicians doing their residency training. Table 1.3 indicates the relatively meager growth between 1985 and 1988 in the number of residents in the three primary care specialties compared with the total growth in

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Table 1.1 Supply of Active Physicians in Family Practice, General Pediatrics and General Internal Medicine, 1981 – 1987

	1981		1987		1981–87
Specialty	No.	% of All MDs	No.	% of All MDs	Percent Change
Total Physicians	485,123	100.0	585,597	100.0	20.7
Family Practice	31,195	6.4	44,944	7.7	44.1
General Pediatrics	28,027	5.8	34,669	5.9	23.6
General Internal Medicine	60,118	12.4	72,038	12.3	19.8
Total	119,340	24.6	151,165	25.8	26.7

Source: American Medical Association, Physician Characteristics and Distribution, 1982 Edition and Forthcoming 1988 Edition.

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Table 1.2 Projected Change in Number of Professionally Active Physicians, General and Family Practice, General Internal Medicine and General Pediatrics 1986, 2000 and 2020

				Percent Change	Percent Change
Specialty	1986	2000	2020	1986–2000	1986–2020
All Physicians	521,780	667,370	757,130	27.9	45.1
General and Family Practice	71,320	81,660	95,100	14.5	33.3
General Internal Medicine	76,260	91,440	105,930	19.9	38.7
General Pediatrics	34,530	46,040	51,520	33.3	49.2
Primary Care Physicians	182,110	219,140	252,550	20.3	38.7

Source: U.S. Department of Health and Human Services, Sixth Report to the President and Congress on the Status of Health Personnel in the United States. DHHS Publication No. HRS-P-OD-88-1. June 1988.

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Table 1.3 Number and Percent of Residents on Duty September 1. Family Practice, General Internal Medicine, General Pediatrics. 1985 – 1988.

	1985		1986		1987		1988		1985–88
Specialty	No.	%	No.	%	No.	%	No.	%	Percent Change
Total Residents	74,514	100.0	76,815	100.0	81,410	100.0	81,093	100.0	8.8
Internal Medicine	17,832	23.9	18,116	23.6	18,153	23.0	18,074	22.3	1.4
Family Practice	7,276	9.8	7,238	9.4	7,346	9.0	7,175	8.8	0.0
Pediatrics	6,088	8.2	5,817	7.6	6,262	7.7	6,321	7.8	3.8

Source: Crowley, A.E. and S.L., Etzel. 1988. Graduate Medical Education in the United States. Journal of the American Medical Association. 260(8):1093–1101; Etzel, S.L. et al. 1989. Graduate Medical Education in the United States. Journal of the American Medical Association. 262(8):1029–1037.

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residents.[1] It must be remembered that close to two thirds of internal medicine residents enter subspecialty training (Department of Health and Human Services, 1988). Some analysts interpret data from the National Resident Matching Program as cause for alarm (see for example Colwill, 1988). Table 1.4 illustrates the four-year trend in United States seniors entering primary care residency programs. Each of the three specialties experienced a downward trend of some magnitude. These data, together with indications from an annual survey of graduating medical students, underlie the concerns about the supply of primary care physicians. Data from this survey (Table 1.5) show declines in the proportion of medical students, who each year represent the most recent entrants into the residency pipeline, choosing primary care specialties. Data from the National Resident Matching Program also highlight the fact that the number of available primary care residencies is not necessarily the determinant of the number of primary care physicians that enter the workforce. Between 1983 and 1989, the number of residency positions in primary care offered to physicians in their first year after medical school increased faster than the positions were filled. Thus, family practice positions offered increased by 4.4 percent and the proportion filled by U.S. graduates fell from 71.4 percent to 59.8 percent. Including foreign graduates the proportion filled fell from 80.6 percent to 71.1 percent. Internal medicine first year positions offered grew by 19 percent between 1983 and 1989, while the fill rate dropped from 71.9 percent to 63.5 percent and 86.3 percent to 80.4 percent respectively for U.S. graduates and in total. The pediatric experience was similar. Positions increased 15.2 percent and the fill rate dropped from 65.8 percent to 60.7 percent and 84.6 percent to 80.0 percent respectively for U.S. graduates and in total (National Resident Matching Program, 1989). However, there are indications that the number of U.S. graduates filling residencies is higher than indicated by data from the National Resident Matching Program.

[1] Data from the American Board of Pediatrics indicate that the number and growth rate of pediatric residents may be somewhat higher than indicated by the data in Table 1.3 According to data derived from the number of residents taking the Board's annual in-training exam and a follow-up survey of programs, the number of general pediatric residents grew from 6,695 in 1985 to 6,942 in 1988. (Personal Communication, Thomas K. Oliver, Senior Vice President, American Board of Pediatrics, October 2, 1989). This growth of 3.6 percent exceeds the 2.9 percent shown by data from the American Medical Association, but is nevertheless substantially below the 9.2 percent growth for all residents between 1985 and 1988 shown by the same data set of the American Medical Association.

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Table 1.4 National Resident Matching Program Positions Matched by U.S. Seniors

					Percent Change
Specialty	1986	1987	1988	1989	1986–89
Internal Medicine*	4,067	3,750	3,668	3,432	– 15.7
Family Practice	1,680	1,729	1,493	1,468	– 12.6
Pediatrics	1,367	1,366	1,313	1,256	– 8.1

* Excludes preliminary programs because a high proportion of that group enters other specialties.
Sources: Jack M. Colwill. 1988. Primary Care Education: A Shortage of Positions and Applicants. Family Medicine 20(4):250–254; National Resident Matching Program, Evanston, Illinois.

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Table 1.5 Specialty Choice of Medical School Graduates 1981 – 1988

Percent of All Graduates with Definite Choice			
	General Internal Medicine	General Pediatrics	Family Practice
1981	12.7%	7.3%	17.3%
1982	13.9	6.8	18.2
1983	12.7	6.5	17.7
1984	10.4	6.6	17.0
1985	10.3	5.6	15.9
1986	8.3	5.4	17.0
1987	6.8	5.2	18.3
1988	7.3	4.9	13.6

Source: Association of American Medical Colleges. Graduation Questionnaire 1981 – 1988. Washington, D.C.: Association of American Medical Colleges.

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Such indications are found in data collected by the American Medical Association and frequent anecdotes of positions unfilled by the match being filled by U.S. graduates after the match has been completed.

Behind these numbers lie the factors that cause physicians to select specialties. The extent to which financial factors determine choice is not completely clear. Only 0.7 percent of graduating medical students in 1988 stated that income relative to other specialties was the most important factor in the choice of specialty (Association of American Medical Colleges, 1988). However, survey data on such a topic may contain distortions because of reluctance to admit to being influenced by financial factors. Nevertheless, rational economic decision-making would steer physicians away from primary care specialties; the return on the educational investment is lower for the primary care specialties than for all other specialties except psychiatry (Marder, 1988); the incomes of primary care specialties are low compared with other specialties, and the income differential between the highest-paid specialties and the lowest-paid specialties (pediatricians, general and family practitioners, and psychiatrists) is growing. Between 1977 and 1987, the real mean net income (after expenses and before taxes) of general and family practice physicians fell by 0.3 percent; for pediatricians the drop was 0.6 percent and for internal medicine physicians there was an increase of 0.7 percent. Other specialists did better. The real net income of the average physician increased by 1.5 percent over the same period; 3.3 percent for surgeons and 2.8 percent for anesthesiologists. The actual net income differentials were also considerable in 1987. Pediatricians, general and family practitioners and internal medicine physicians had net incomes of $85,300, $91,5000 and $121,800 respectively, compared with net earnings of over $163,000 for obstetrician/gynecologists and anesthesiologists, and over $180,000 for surgeons and radiologists (Gonzalez, 1988). Some economic analyses indicate that future earnings do have a small impact on specialty choice (Sloan, 1980 and Hadley, 1977 cited in Yoder, 1983). One empirical analysis using sophisticated econometric techniques indicates that expected lifetime earnings have a statistically significant but small effect overall on the specialty choice of United States medical school graduates. It is, however, interesting to note that this finding does not hold for women physicians (Marder, 1988).

Primary Care and the Problems of Indigent Care The committee felt strongly that any policies that increase the support of primary care ambulatory residencies should be analyzed in terms of their impact on access to care for medically indigent patients—both to ensure that access is not imperiled and if possible to increase the availability of services for disadvantaged populations.

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The interaction between care for indigent patients and primary care resident financing is complex. On the one hand, primary care training in ambulatory settings is hard to finance, in part because these settings customarily provide care for substantial numbers of medically indigent patients. On the other hand, as can be seen from numerous examples (Walkington, 1989), primary care ambulatory residency programs can be used by state and local governments to provide needed care for indigent residents. When state or local governments pay for such care, the financial difficulties of the programs can be eased. Such a proposal is spelled out by Reiselbach (1986):

> "a linkage between the funding of graduate medical education and care of the indigent may be an effective means of accomplishing the changes in clinical education and indigent care necessitated by major problems in these areas".

The natural affinity that has developed between GME and hospital care can be extended to primary care settings resulting in benefits to education as well as patients.

Another aspect of the relationship between primary care physicians and care for indigent people is the role of primary care in the prevention of hospitalization and serious illness. This role is made clear by the following data: a survey of uninsured patients admitted to Washington, D.C. hospitals indicated that nearly 40 percent had no usual source of primary or outpatient care. When evaluated by hospital quality assurance staff it was discovered that more than one-third of uninsured, non-obstetric, non-trauma patients could have avoided the admission of they had received timely primary care. In addition, analysis revealed that admission rates for diagnoses that are well suited to management in an outpatient setting were much higher in poorer areas of the city, where the proportion of uninsured residents is highest (Barch, 1989). These data again indicate that access to primary care can be a cost effective and humane health system response to the problem of medical indigency.

Finally, residents are important in enabling teaching hospitals to provide significant amounts of uncompensated care. The fear is that if primary care residents substantially reduce their inpatient service time, the costs of replacing residents with other personnel will reduce the financial ability of the hospitals to sustain their uncompensated care load. This could, in some localities, have a serious impact on access to hospital care for medically indigent people. The role of teaching hospitals in the provision of uncompensated care is quite substantial. In 1986, 369 teaching hospitals (members of the Council of Teaching Hospitals) provided a disproportionate amount of the uncompensated care (deductions for charity care and bad debt) provided by short term non-federal hospitals. These

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369 hospitals provided 40 percent of uncompensated care and received only 29 percent of net patient revenues (Association of American Medical Colleges, 1988b).

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Chapter 2

Costs and Revenues for Primary Care Residencies in Ambulatory Settings

This chapter describes the costs and revenues of graduate medical education for primary care physicians in ambulatory settings. Unless otherwise indicated, it is based on two papers commissioned by the committee: The Cost of Graduate Medical Education in Outpatient Settings by Judith R. Lave, and Financing of Medical And Graduate Medical Education: Issues in Primary Care Education Support by Ruth S. Hanft. These papers can be found in Appendix B.

INTRODUCTION

Analysis of medical education financing is made complicated by the fact that medical education and the provision of clinical services often take place simultaneously. The teaching physician provides care while instructing residents; residents provide services, receive instruction, and help train others. The institution in which this training takes place receives revenues for patient care, some revenues for educational functions, and incurs costs by providing patient care and education. Attempts to separate and apportion the revenues and costs to different functions have met with little success, and many questions are unanswered. Analysis of the costs and revenues of ambulatory based residencies is further complicated by three circumstances: lack of data on revenues that would allow disaggregation by specialty and site; lack of precise definition of the costs involved in the transition of residents to ambulatory care sites; and the great variety of ambulatory sites for which there is a wide range of costs and revenues. Also, common cost definitions and allocation methodologies have not been developed to measure and define costs among different practice sites.

COSTS

Most studies of the cost of GME have focused on the inpatient setting. The cost of inpatient training has been defined as the difference in total costs between a hospital that provides training and a hospital that is identical except that it does not provide training. This difference has been difficult to calculate because of the problems of trying to separate the costs of training, research, and service. Although major teaching hospitals are more expensive than non-teaching hospitals, not all of the differential is attributable to teaching. Other factors that may cause

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costs to be higher in teaching hospitals include case mix and location. Because of the difficulties in disaggregating costs of teaching and service, analyses of the costs of training in hospitals have often focused on the two major costs components—direct and indirect teaching costs. Direct costs are composed of resident stipends, teaching physician salaries, fringe benefits, and allocated hospital overhead. Indirect costs are the increase in patient costs incurred because the hospital is engaged in teaching. These indirect costs are incurred because of increased space and record keeping needs, the test ordering behavior of residents, and similar factors. However, these costs do not properly reflect the physician component; residents are counted only as generating costs rather than as partial substitutes for more expensive physicians.

There are four major questions that can be asked when considering the costs of residency training in ambulatory settings. First, what is the difference in the net cost of providing care between a site that has no residents and a site that trains residents? Second, what is the net cost of training residents to the site or institution—does it incur net costs, break even, or make a profit? Third, what is the cost of training in ambulatory settings compared with the cost of training in inpatient settings? Fourth, what are the costs of shifting residents from inpatient to outpatient settings? The first two questions have been the focus of most studies of the costs of outpatient GME.

The question of whether the cost of providing care is higher when residents are being trained has been quite extensively explored, and the answer depends on such variables as the amount of faculty time used, the relative pay of faculty and residents, the productivity of physicians, and the costs associated with employing residents.

In investigating differences in practice costs with and without residents, analysts have looked at some of the costs associated with providing education, such as use of space, nursing services, and test ordering. For inpatient GME, increases in such expenses are described as indirect costs of education. One study, which compared test ordering habits of residents and faculty in an ambulatory setting, found that residents had a considerably higher propensity to order tests than did faculty.

Several studies, using different methodological approaches, have tried to estimate whether the ambulatory training site incurs net costs by having residents or medical students. Such studies have used a variety of measures including cost per visit with and without residents and comparisons of costs before and after the introduction of residents. Not surprisingly, given the variation in settings in which ambulatory training occurs, the results of these studies do not concur. Variations are also caused by differences in such factors as faculty salaries,

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supervision or teaching time, the relative income of residents and fully trained physicians, and the management of the practice. Although some studies indicate that there are net costs are incurred by having first-year residents, this does not in general apply to second- and third-year residents.

Another set of studies examined the impact of training on the financial status of the sponsoring institution. These studies focus on the flow of costs and revenues. Costs in general include the costs of providing services in the clinic, the full cost of the training program (which includes a portion of faculty salaries and all of the residents' salaries), and administration of the training program. Revenues in general include patient care revenues and grants. Once again, the results of existing studies show significant variation, some of which is caused by differences in the selection of the costs and revenues that were included in the studies. For example, one study of residents in four primary care sites found that revenues from residents patient services covered 77 percent of costs (which included all of the residents' salaries, although they spent less than 50 percent of their time at the primary care sites). Two surveys of family practice residency programs found that patient revenues accounted for about 31 percent of program costs. An evaluation of some general internal medicine practice sites in low income areas found that revenues exceeded costs for the sponsoring hospitals. However, in that study revenues included an estimate of income from increased admissions and testing generated by the sites. This evaluation also found that the practices were badly managed—a factor shown to be of some importance in contributing to financial viability (Walkington, 1989). In general, patient care revenues will cover costs if the practice is allocated only the portion of faculty and residents costs that reflect the time spent in the clinics. Revenues are not sufficient to cover the full salaries of residents, faculty and administrative staff who are responsible for the program.

Information on the costs of training in outpatient settings compared with inpatient settings is not available. However, several factors are cited as causing the cost of training residents in ambulatory care settings to exceed the cost of training in inpatient settings. These include the "inefficiency" of the ambulatory site compared with the inpatient setting where scheduled attending rounds bring residents and faculty together. In ambulatory care the teacher cannot bring large groups of residents to a patient, and the patient cannot be asked to wait for the convenience of the teaching experience. A second factor thought to result in higher costs of training in outpatient settings is the need for additional space. Ambulatory clinics are often economically built with small examining rooms and without conference or classroom space. Introducing residents requires teaching areas, and larger examining rooms to accommodate a fully trained physician and resident as well as the patient. In a hospital residents are more easily accommodated without additional or dedicated space.

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One of the concerns of policymakers interested in the effects of a shift from inpatient to outpatient training is the need to substitute other manpower for the residents whose inpatient service time is reduced. To the extent that residents must be replaced by more costly personnel, the move represents an additional cost—a cost that is born by the hospital. It is important to bear in mind, however, that personnel such as nurses, nurse practitioners, and physician assistants, who are less expensive than fully trained physicians, can be used to replace residents to some extent thus reducing the incremental cost to the hospital. Also, hospitals can bill more services to third-party payers than is possible when residents provide services.

To summarize what is known about the costs of ambulatory care training: important variables are patient flow, the amount of faculty input and faculty salaries, the efficiency of the clinic management, and the portion of residents salaries allocated to the ambulatory site. The influence of these variables makes it hard to draw firm conclusion across sites, but there are findings that indicate that net costs are incurred by training first-year residents in primary care clinics; for second- and third-year residents this is generally not the case. There are also indications that clinics incur indirect costs associated with the presence of residents in clinics. Finally, if clinics are allocated the full cost of residents salaries, and if the salaries of teaching and administrative staff who are responsible for the program are included, the income generated is not sufficient to cover the costs of the training program.

REVENUES

The modern era of medical education financing began after World War II. Over the subsequent decades several events combined to change the way in which medical education was supported. A boost to medical education was given by the decision to designate medical schools and affiliated teaching hospitals as the recipients of the National Institutes of Health research grants program. Although this program was not intended to support medical education, medical schools and clinical residency programs structured their divisions and training programs to align them with the subspecialty pattern of the grants program (Ebert and Ginzberg, 1988). Grants from the National Institutes of Health support some faculty salaries, as well as helping to defray general expenses through indirect cost payments. Research in primary medical care receives targeted support through a set-aside from the National Research Services Awards that amounts to approximately $1.3 million (U.S. General Accounting Office, 1987). In the 1960s, direct federal support for undergraduate medical education began, and a series of health manpower bills supported the construction and expansion of medical schools.

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In the 1950s, patient care revenues began to increase as the expansion of private health insurance enabled hospitals to pass on education costs through charges, and in the 1960s the enactment of Medicaid and Medicare brought to the hospitals a large volume of paying patients, many of whom had formerly received free care. Teaching hospitals in particular benefited from Medicare and Medicaid because these hospitals had provided a large amount of charity care, and their physicians, who had previously provided free care, also began to be paid for their services. For the first time residents received a reasonable stipend and supervising physicians were paid for that activity.

As Table 2.1 indicates, the relative importance of sources of funding for medical schools has changed substantially since the 1970s. Most significant have been the growth of patient revenues (largely derived from the teaching/patient care activities of GME that flow into medical practice plans), and the decline in importance of federal non-research revenues. The amount of money generated by practice plans varies widely among programs, and depends on such factors as the sources of payment for patient care and the structure of the practice plan. What these data do not show is that third-party payments generally finance a greater proportion of the costs and charges for inpatient than outpatient care; reimbursement for outpatient services more often includes deductibles and coinsurance than does inpatient insurance. Also, third-party payers often do not cover preventive services.

Table 2.2 points up the variation among hospitals in sources of revenues, and the important effect of ownership of medical schools. The nearly 60 percent of medical schools that are publicly owned receive on average almost 30 percent of their revenues from state or local governments. Private schools are more dependent on hospital reimbursement, although this may to some extent be an artifact of the flow of money from states.

State and federal governments have made efforts to influence the supply and specialty distribution of physicians. The GME revenues made available through these sources will be examined before we move to patient care resources.

Federal Manpower Policy and GME for Primary Care

By the mid-1970s, the rationale for federal capitation support of medical education—the need for more physicians—had virtually disappeared. In its place arose a concern about the geographic and specialty mix of the physician labor force, and a corresponding move to create a new primary care specialty—family

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Table 2.1 Trends in U.S. Medical School Revenues Selected Years 1971 – 1987

Revenue Source	1970–1971 Percent	1975–1976 Percent	1986–1987 Percent
Federal research	25.6	24.3	19.9
Other federal	18.8	11.7	3.8
State & local government	18.9	23.8	18.5
Tuition and fees	3.7	4.6	5.3
Medical service	12.2	18.0	37.6
Other income	20.9	17.6	14.8
Total*	100.0	100.0	100.0

* Totals may not add due to rounding.
Source: Jolly, Paul, et al. 1988. US Medical School Finances. Journal of the American Medical Association. 260(8):1077–1085. Table 4.

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Table 2.2 Revenues of Public and Private School by Source of Funds, 1986 – 198

	Percent Distribution	
Source of Funds	Public	Private
State and local government	29.7	2.2
Professional fee income	19.4	22.5
Recovery of indirect costs	5.0	8.3
Tuition and fees	3.2	7.6
Endowment	0.2	2.3
Gifts	0.2	1.2
Income from college services	1.7	0.8
General university funds	2.4	1.0
Reimbursement from hospitals	7.8	21.2
Research and teaching training	1.5	1.1
Sponsored programs*	25.9	29.0
Miscellaneous	2.9	2.7
Total**	100.0	100.0

* Mainly biomedical research.
** Totals may not add due to rounding.
Source: Jolly, Paul, et al. 1988. US Medical School Finances. Journal of the American Medical Association. 260(8):1077–1085. Table.9.

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medicine—occurred. Several pieces of legislation were designed to encourage redistribution of physician manpower, and this effort produced new sources of primary care GME support—grant programs to facilitate the development of family practice programs and to support pediatrics and general internal medicine residencies. Title VII of the Public Health Service Act began, in the 1970s, to address specific physician manpower problems in specialty and geographic distribution.

Grants for family practice residency programs became available in fiscal year 1972 under the Comprehensive Health Manpower Training Act of 1971, (P.L. 92–157) when $5 million was appropriated. Appropriations for this program peaked at $40.5 million in 1978–1979. In 1988 about $20 million was available. The purpose of the program was stated in 1988 as:

> "aimed at reversing the significant downward trend in the number of general practitioners that has occurred in the past. It supports the development of family medicine faculty and family medicine training programs so that additional family practitioners will be available to enter the health care delivery system" (U.S. Department of Health and Human Services, 1988).

A federal program to support primary care training in general internal medicine and general pediatrics was authorized by Section 784 of the Health Professions Education Assistance Act of 1976. This was one of several initiatives to improve access to, and the quality of, primary care services. A major purpose of the program was to counter the trend toward subspecialty training that had been evidenced by these disciplines (Boston University Medical Center, 1987). Funding for this program has been modest, with appropriations of $13–18 million in recent years.

The importance of the direct federal grant programs is underlined in case studies (Walkington, 1989) and in evaluations of the programs, which concluded that the grants have been essential to the initiation of programs, the establishment of primary care curricula, and the continuing stability of the programs (Boston University Medical Center, 1987; Policy Analysis Inc., 1986). However, not only do these grant programs have limited funding, but also they face other problems. One is the unpredictability of long-term funding and the grant-writing burden that is integral to any grant program. Another is a requirement that 25 percent of residents' time be spent in a "continuity setting"—a clinic in which the resident has ongoing responsibility for a panel of patients. Programs sometimes experience difficulty in fulfilling this requirement as well as providing all the other experiences needed during a primary care residency.

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State Support for GME

State support plays a major, but uneven, role in financing GME and primary care ambulatory residencies. Such support varies both among states and among primary care specialties.

In 1987, 76 of the nation's 127 medical schools were state owned or state related; 74 received state appropriations. In addition, states sometimes subsidize private medical schools, support state-owned hospitals (state university hospitals provide approximately 15 percent of all residencies), and provide funds to support residencies—most often in family medicine. Finally, the portion of state Medicaid expenditures and indigent care funding that flows to teaching hospitals and non-hospital teaching sites, also contributes revenues that support GME. This will be discussed further in the next section. There is a history of state intervention to influence the specialty or geographic distribution of physicians. State programs have been designed to encourage schools to choose applicants likely to practice in rural areas or in primary care. Programs have supported primary care residencies, preceptorships and research. Some states have programs, such as that of the Area Health Education Centers, that try to encourage physicians to enter rural practice by developing and supporting education in rural sites.

State direct support of residencies goes typically to family practice; in 10 of the 30 states that supported residency programs in 1986, 100 percent of residencies funded were in family practice. Overall, nearly half of state funding for clinical medical education (including undergraduate and graduate) went to family practice. In addition some states targeted family medicine departments in state schools for special support (Mandex, 1987). The success of some states in garnering this support may be due to family practice being seen by legislators as solving problems of rural access to physicians (Walkington, 1989). Some states perceiving an oversupply of physicians have reduced the number of residencies they support. However, states can take a sophisticated approach to their physician needs and ways of meeting them. The New York State Council on Graduate Medical Education conducted an analysis of the functions of primary care physicians, the competencies and training needed and the supply and need for such physicians. The council recommended of ways of increasing the supply of primary care physicians that included requiring that a portion of all residencies should be in primary care, that capitation payments currently made to family practice residency programs should be expanded to general internal medicine and pediatrics, and that Medicaid payments for primary care services be increased to a point where it is financially feasible for physicians to provide for the primary care needs of Medicaid eligible patients (New York State Council on Graduate Medical Education, 1988).

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State-funded operating subsidies are occasionally available to specifically support ambulatory GME. One study identified three states (Alabama, Florida, and Michigan) that in 1986 supported a range of ambulatory programs (Mandex, 1987).

Examples from two states illustrate the role of state funding of GME. California in 1985–86, financed 40 percent of resident stipends and fringe benefits in five university teaching hospitals. There was also a state grant for family medicine residencies. Indiana subsidizes residency programs in community hospitals, and provides grants for family practice residencies.

The Veterans Administration

The Veterans Administration makes a significant contribution to GME. It supports about 12 percent of the nation's residencies; about 30,000 residents per year rotate through Veterans Administration hospitals; and more than 2,200 medical school faculty members are supported. However, little emphasis is placed on ambulatory care training, family medicine and pediatrics (Peinado and Eisenberg, 1989).

Patient Care Support

Although patient care activities are integral to medical education financing and play an increasingly important role as a source of support, outpatient and primary care education operate at a disadvantage. Third-party reimbursement pays a higher proportion of costs and charges for inpatient than for outpatient care. In addition, until recently, inpatient care less often required that patients shared the cost—as is customary for outpatient coverage. Furthermore, preventive services, most often within the purview of primary care physicians, are frequently not covered by third-party payers. Also, public and private coverage tends to reward "procedural" care more generously than the "cognitive" care that is one of the strengths of the primary care provider. These differences in reimbursement are thought to account in part for the emphasis on specialty and subspecialty training in medicine, and for the perceived difficulties in financing primary care residencies in ambulatory settings.

Medicare Financing of GME Before the introduction of prospective payment, Medicare reimbursed hospital GME expenses as an allowable cost. When limits to payments for routine care were set it was realized that teaching hospitals were

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disproportionately affected because direct teaching costs were included in routine costs. Teaching hospitals were therefore allowed to apply for an adjustment. By 1979 it was decided to exclude direct teaching costs from the calculation of routine costs and allow them as a "pass through". This concept was incorporated in the 1982 Tax Equity and Fiscal Responsibility Act and in the prospective payment legislation of 1983. Hospitals today receive about $1 billion in Medicare revenues for the direct costs of medical education. The Consolidated Omnibus Budget Reconciliation Act of 1985 put the direct GME payment on a per-resident basis. At the same time changes were made that contain disincentives (reduced payments) for the hospital to provide residencies for residents beyond initial board eligibility. Thus the primary care residencies will receive full payment, while some subspecialty training, and training beyond five years, will receive reduced payment. Also assisting primary care and a move to training in outpatient settings, the Omnibus Budget Reconciliation Act of 1986 extended the Medicare direct education payment from hospital outpatient departments to non-hospital settings if the resident is involved in patient care activities and there is a written agreement that the hospital bears substantially all the training costs in the outside setting (Federal Register, 1988). These have not yet been implemented and the impacts are therefore not known.

In addition to the direct costs of education that are paid by Medicare, other operating costs are associated with education, even after controlling for bed size, location and wage differences. Medicare pays for these higher costs through an indirect cost adjustment. This adjustment is based on a curvilinear formula that builds on the number of interns and residents per bed. Medicare's indirect teaching adjustment can represent important support for hospitals—depending on the size of their teaching programs. For example the roughly 200 hospitals classified as major teaching hospitals receive an indirect teaching payment that averages $1,640 per case (Congressional Budget Office, 1989). An analysis by the Association of American Medical Colleges based on data from 65 members of the Council of Teaching Hospitals, indicates that the indirect medical education adjustment accounts, on average, for nearly 20 percent of the total Medicare Prospective Payment System (PPS) payments to those hospitals. Moreover, a cut in the Medicare indirect medical education adjustment from the current 7.7 percent level to 4.05 percent would reduce average PPS margins from a positive 5.3 percent to a negative 5.2 percent (Buchanan, 1989).

The Consolidated Omnibus Budget Reconciliation Act of 1985 sent "a clear message from Congress about the importance of ambulatory care education" (Eisenberg, 1989) when it specified that outpatient time should be included in the calculation for the indirect education adjustment. This removed a disincentive for using the hospital outpatient departments for residency training, but a disincentive for use of a clinic not run by a hospital still exists. Residents in a clinic that is

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not an outpatient department of a hospital may not be counted in the number of residents on which the indirect adjustment is based although that setting may incur substantial additional costs due to resident teaching.

Medicare's payment for the indirect costs of education has been vulnerable to reduction as cost savings are sought and new regression analyses demonstrate that the level of payment has been higher than indicated by empirically derived estimates of the relationship between teaching effort and Medicare cost per case. In the latest round of negotiations, the Prospective Payment Assessment Commission recommends a reduction of the indirect payment from 7.7 percent to 6.6 percent. This is substantially higher than the 4.4 percent that regression analysis suggests as appropriate. The commission drew back from recommending the larger cut because of concerns about the impact on the financial health of teaching hospitals (Prospective Payment Assessment Commission, 1989). The final budget request of the Reagan administration recommended reducing the indirect medical education payment to 4.5 percent. In 1988 the Medicare indirect medical education adjustment is expected to have cost $2.02 billion.

Some support of graduate medical education in outpatient settings is found in Medicare Part B payments for physicians' services. Residents in a non-hospital-based clinic who are licensed physicians can under some circumstances (if the supervising physician has not billed and if the hospital has not assumed the costs of education) bill Medicare for their services. However, it must be noted that Medicare Part B payments suffer similar disadvantages to other payments for primary care and outpatient services; they are less well paid than inpatient services and the cognitive and evaluative services are less well paid than procedures. Supervising faculty can, to a limited extent, bill Medicare for services in the outpatient teaching setting.

Patient care income is the major source of funds for GME generally, and an important source for sustaining the ambulatory clinics in which residents train. However, patient care income is usually inadequate to cover the full costs of education, although the clinic costs associated with providing patient care are often covered by revenues. The relatively low level of pay for primary care is a major factor in the shortfall. To make physician payment more rational—that is to make the level of payment reflect the costs incurred by an efficient provider, including time and practice costs—the Physician Payment Review Commission (PPRC) has recommended that Medicare reform its physician payment schedule. The PPRC was created by law in 1986 to advise the government on reform of Medicare physician payment. The charge was later expanded to include consideration of ways to control the rates of increase in expenditures and utilization of physician services. In April 1989, the PPRC recommended that Medicare gradually abandon its "customary, prevailing, and reasonable" payment

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method in favor of a resource-based relative value scale (RBRVS) that is a modification of work done by William Hsiao and colleagues at Harvard University. If RBRVS payment, as designed by PPRC, is implemented, fees for evaluation and management services such as office visits will increase, and fees for many surgical specialties will decrease. Medicare payments, assuming no change in utilization, for internal medicine and family practice would increase on average 17 percent and 38 percent respectively. Other specialties would see a drop in payments. For example surgical specialties would decrease by an average of 11 percent, hospital-based radiology by 21 percent. However, the financial impact on a physician would depend on the mix of services provided, the proportion of Medicare patients in the physician's case load, and any policy adopted to limit balance billing. The PPRC also recommended that the Medicare fee schedule should not contain specialty differentials—meaning that differences in payment to physicians of different specialties who perform the same services should be eliminated (Physician Payment Review Commission, 1989).

Medicaid Support of GME Support for GME from Medicaid programs varies considerably among states. Medicaid programs are not required to follow Medicare reimbursement principles, and some do not recognize education costs. For instance, in 1986 out of 20 states identified by one study 3 states had no Medicaid expenditures for medical education (Mandex, 1987).

Studies of the Montefiore Social Medicine Program and the SUNY-Buffalo Family Practice Programs emphasize the important role that Medicaid can play in supporting GME for primary care. New York State Medicaid authorizes institutional provider rates for qualified institutions. Thus two clinics that the Montefiore program uses receive $55 and $80 per visit—payment that is described as sufficient to provide quality care, and break even on care in the teaching setting, although some costs of education remain uncovered. Similarly, Medicaid reimbursement of $70–80 per visit is critical in allowing the SUNY-Buffalo Family Practice Program to support residents at family practice centers and numerous other faculty-staffed ambulatory sites (Walkington, 1989). However, such generosity is not the rule for most Medicaid programs, therefore residency programs that use sites such as community health centers that are heavily dependent on Medicaid payments suffer a shortfall of patient care revenues that can undermine the ability to support residencies, particularly when Medicaid payments are well below average practice costs.

Other Third-Party Payers The extent to which commercial insurance and other third-party payers support GME varies. Those that pay hospital charges are implicitly paying the additional costs of teaching. However, the base of charge-

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paying patients is being eroded by the advent of negotiated payments from PPOs, HMOs etc.

In the outpatient setting the fee levels for primary care are below the levels for procedure oriented specialties, and many of the activities that characterize primary care are not reimbursed. Unlike the inpatient setting, there has not been an acceptance of payment for additional costs of teaching in ambulatory sites. The payment of charges is based on the norms for the community, and teaching sites seeking to capture from charges some of their teaching costs are likely to lose their self-pay patients and those who pay deductibles or coinsurance to less costly, non-teaching providers.

The Importance of Payer Mix Numerous cost studies, and case studies (Walkington, 1989), indicate that clinic fees are critical to the viability of ambulatory care training sites for primary care. In outpatient settings the resident's salary and supervisory salaries of faculty as well as other teaching costs must be earned from patient income or the relatively small amounts available from grants. While it has been shown that residents in their later years can earn enough to cover the additional costs that teaching sites incur, lacking the explicit or implicit education payments that providers of inpatient care receive, the level of patient care revenues becomes critically important. Thus the types of payers and their levels of payment and coverage of services is central to sustaining the educational activities.

Many of the ambulatory care sites in which primary care residents receive their training are large providers of care to unsponsored patients and Medicaid patients. For these sites it is particularly difficult to earn the additional revenues needed to cover the costs of teaching. For sites in which the patient population is well insured by third-party payers, the problem is less acute. However, a price-competitive environment constrains the extent to which settings such as HMOs and other practice sites can cover costs from patient care fees.

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Chapter 3

Options and Recommendations for Financing Graduate Medical Education for Primary Care Physicians in Ambulatory Care Settings*

Numerous individuals and committees have recommended ways to overcome barriers to financing GME in primary care and GME in ambulatory settings. Recently reported strategies include the expansion of Medicare GME payments to all ambulatory and outpatient settings (Council on Graduate Medical Education, 1988), and the expansion of state capitation grants to include primary care internal medicine and general pediatrics programs (New York State Council on Graduate Medical Education, 1988). Eisenberg (1989) offered a number of options including increased Medicare payment for ambulatory care services, Medicare teaching adjustments for Part B payments, and contributions from future employers of physicians in exchange for practice commitments. Bentley et al. (1989) made several suggestions, including that practice plan revenues could help finance ambulatory care education, and that the public sector contribute through targeted grants and appropriations that provide economic incentives for training in ambulatory settings.

Proposals such as these have identified several potential sources of funds, with varying implications for such factors as hospital revenues, the costs of services, state and federal budgets, and physician incomes. The committee approached the task of developing policy options for financing GME for primary care physicians in ambulatory settings first, by identifying existing barriers; second, by constructing a set of criteria against which to evaluate options; and finally by developing the committee's recommendations. This chapter will briefly review the existing barriers, and describe criteria against which proposals for altering the mechanisms for funding GME in primary care can be evaluated, and finally lay out the committee's recommendations.

* Parts of this chapter are based on a paper commissioned by the committee: Financing Graduate Medical Education In Primary Care: Options for Change by Sandra C. Peinado and John M. Eisenberg. This paper can be found in Appendix B.

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BARRIERS

Costs of Training

Certain characteristics of training in ambulatory sites account for the high costs of training in these settings. These characteristics include: the one-on-one nature of the interactions between residents and faculty; the loss of income experienced by host physicians for which compensation may be required; and the need for additional space to accommodate residents. In addition, primary care teaching clinics are often the site of services for medically indigent individuals. The provision of uncompensated care may be regarded as a cost or as a reduction in revenue.

The Reimbursement Playing Field is Not Level

Payment for non-primary care services and inpatient care is often greater than for primary care services and outpatient services. Differences in reimbursement include: incomplete recognition by Medicare of residents' time in outpatient settings; non-recognition by many third-party payers of teaching as a reimbursable cost in outpatient settings; lower payments by third-party payers for services provided by primary care physicians, outpatient physician services, and non-procedural services; and frequent lack of coverage of preventive services. In addition, community-based outpatient clinics are at a disadvantage compared with hospital-based clinics, because at the latter sites payers sometimes pay for an overhead assumed to be contributed by the hospital to its clinics.

Academic Barriers

There is widespread recognition that medicine's academic values and reward systems are not oriented toward the primary care specialties and outpatient services. In addition, the demands of clinical service, which may be higher for the less well reimbursed primary care faculty, make it difficult to develop the research and teaching skills needed to improve the quality and efficiency of primary care practice. Moreover, federal funds for primary care research are very limited, and few academic institutions either recognize or reward the development of the curricula and special teaching techniques that are needed for effective outpatient care training. The low esteem in which primary care and clinic work is held is

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transmitted to residents, and the lack of role models of esteemed, successful, practicing/teaching primary care academicians is detrimental to education. Finally, faculty support is not sufficient to help programs develop adequately trained faculty in areas such as decision analysis and quality assurance. These areas must be emphasized to ensure that they are included in the training of primary care physicians.

CRITERIA FOR EVALUATING POLICY OPTIONS

Criteria developed by the committee reflect several concerns; some concerns have to do with political and fiscal realities—policy should be made with an understanding of the constraints under which decision makers would try to implement change; some concerns are based on values held by members of the committee that were felt to be of such importance that policy options should be judged in terms of whether these values could be sustained under the proposed change. The committee reviewed many more criteria than are listed here (most will be found in the paper by Peinado and Eisenberg in Appendix B). While many of the criteria have merit, they were considered to be either not of sufficient importance that they should be a significant part of the committee's deliberations, or they were too complex to be useful in the limited time available to the committee. An example of the latter is the notion that all those who benefit from expenditures on GME in primary care should bear the costs. While this proposal has evident appeal, the question of who benefits has been the subject of much discussion, and numerous beneficiaries have been posed. To revisit this debate and make conclusions that would be operationally helpful for the purposes of this study would be a large undertaking from which little of immediate use would result.

Budget Constraints

The committee was convinced that since major new expenditures for GME by the federal government are highly unlikely, only recommendations that are budget neutral will be seriously considered by policy-makers. Thus, rather than risk having recommendations rejected because they violate today's political realities, the committee accepted the need to constrain its recommendations to ways of reallocating resources. Thus if a recommendation is made for significantly increased federal spending on primary care GME, a case for reallocating resources from other areas must also be made.

Although the committee accepted this limitation on its recommendations, members were concerned that it should not be interpreted as indicating a belief

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that the problem of shifting the focus of primary care GME to ambulatory settings is either unimportant or of little public benefit. It is therefore emphasized that, while recognizing today's political realities, the urgent need to initiate actions that will accelerate the needed change in primary care GME should not be underestimated.

Since state budgets are also under pressure, it is unlikely that increases in state contributions to GME are likely to occur unless the case can be made that the state will benefit. For instance, some states may benefit from a change in physician specialty mix toward a greater proportion of primary care physicians. State (and local) budgets may be a source of support for primary care ambulatory training if mutually beneficial ground can be found, such as arrangements between the primary care ambulatory training sites and the state or locality to provide care for medically needy populations.

The concept of health budget neutrality suggests that, unless a source of additional health care funds has been identified, proposals for change should be evaluated in terms of resource redistribution within the health care system. Thus, for example, increases in funding for primary care GME may cause reductions in hospital or physician income or some services may be reduced. The impact of changes on the health system must be evaluated, and particularly valuable institutions and services should be protected. These include such institutions as teaching hospitals that make a substantial contribution to access to care for medically needy populations. The ability of some of these hospitals to sustain the level of care, or even to survive, might be threatened by the withdrawal of residents from inpatient care or reductions in some sources of revenues.

Matching the Needs of Primary Care Residency Programs

Residency programs seeking to expand their primary care ambulatory training can be greatly assisted by grant money at start-up and when major program changes are being made. However, in general, to enable directors to engage in relatively long term planning, programs need predictable financing that will not vary greatly from year to year. The predictability and stability of the funding stream should therefore be a criterion by which a proposal is evaluated.

Changes that encourage the support of primary care should not include such narrowly prescriptive language that the autonomy of educators is unduly constrained and the development of innovative approaches to training is hampered.

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Economic incentives aimed at achieving desired goals should be incorporated into proposals. These may include incentives that encourage the following: an increase in the number of primary care residencies; a refocusing on primary care and ambulatory care activities in traditional programs; the development of curricula that will prepare primary care physicians in skills and settings that match the requirements of practice; efficient operations of training sites; and physicians to select careers in primary care.

Do No Harm to Valued Institutions and Activities

Frequently, alterations in the status quo have unintended side effects. This is particularly likely to occur when making budget neutral changes that, by definition, reallocate resources. The committee identified some areas that are specially vulnerable when GME funding is shifted, and that are of sufficient value that their preservation should be a criterion against which changes are evaluated.

In altering GME funding it is important to ensure that high-quality programs are not adversely affected. Programs that are of less high quality are not the subject of this concern, and programs training physicians to practice specialties in which supply is substantially in excess of the nation's needs are also of less concern. The committee recognizes that defining and identifying high-quality programs is a difficult task—that criteria for excellence such as pass-rates on examinations are not perfect—but believes that moderate reductions in GME financing for some specialties, as recommended by the committee, are not likely to impair the viability of good programs.

Some teaching hospitals today are in precarious financial health. Many of these hospitals also provide substantial amounts of uncompensated care. Alterations in the funding of GME could exacerbate the already serious financial problems of these hospitals. First, reductions in Medicare direct or indirect GME payments would have important adverse effects on the operating margins of some hospitals. Second, any reduction of residents' inpatient service time that would result from successful financing of primary care outpatient training would also require that hospitals employ substitute labor. The cost to the hospital of this change may be significant. Either of these two effects might undermine the ability of some hospitals to continue to provide uncompensated care, or even in the long run to survive. However, primary care training in ambulatory sites, which also provide substantial amounts of uncompensated care, can help lighten the load for their local hospitals by providing timely preventive care. In addition, there are examples of arrangements between local or state agencies and primary

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care training sites whereby an agency has funded care for medically indigent people at the ambulatory site and thus help support primary care training.

The committee's concern that changes not undermine existing arrangements for the care of indigent people, and the committee's interest in furthering the interaction between primary care GME and care for indigent people, derives from an interest in maintaining or increasing the provision of care for indigent people. This position does not imply that the committee believes that those unable to pay for care should receive a different quality of service than those able to pay. Furthermore, ambulatory sites of GME do, and should continue to, attract paying patients.

Finally, policies that reduce hospital margins run the risk of backfiring in terms of support of primary care GME. If hospitals begin to reduce residency support the most likely candidates for elimination are the primary care residency programs rather than the specialties that earn more revenue.

Administration

Proposals to increase the support of primary care GME should not be so administratively complex or costly as to overwhelm administrators and divert the funds intended for education into administration.

CONCLUSIONS AND RECOMMENDATIONS

The committee developed its recommendations mindful of four major considerations. First, the charge to the committee was to improve the quality of primary care graduate medical education by developing financing mechanisms both to increase the amount of time that primary care residents spend in ambulatory settings, and to increase the number of training sites that closely resemble practice conditions likely to be experienced by the physician in future practice. Second, that because of the time and resource constraints under which this study was conducted, the committee found it feasible to approach change only in an incremental manner. The committee was concerned with developing recommendations that would immediately begin to move the policy process in appropriate directions, and acknowledges that there are complex issues that this committee did not address. Third, that proposed changes should foster the attainment of two secondary goals: (1) expand primary care physician manpower, (2) sustain or enhance access to care for medically indigent people. Fourth, that recommendations be developed, as far as possible, in accordance with the criteria set at the beginning of this chapter.

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The committee considered the options presented in the paper by Peinado and Eisenberg (see Appendix B), as well as the other papers and discussion at the workshop. Because federal budget constraints were perceived to be real and expenditure restraint to be socially desirable, the task for the committee was to identify areas of funding in which resources could be reallocated in ways that would support primary care residencies in ambulatory settings and encourage increases in the supply of primary care physicians. The committee reviewed the major sources of support for GME to assess the extent to which resource redistribution was feasible without endangering other socially desirable goals of paramount importance.

The committee also considered whether some new sources of funds could be found. Believing that support of GME is the responsibility of the private as well as the public sector, such sources as contributions from commercial insurance, a tax on all hospitals or non-teaching hospitals, and an extension of outpatient insurance were considered, but were found not to be practical. For instance, voluntary, explicit payment of education costs from commercial insurance is unlikely to occur. If such a payment were made mandatory, or were captured through a new tax, the cost would be passed on by insurers, many of whom claim that health insurance is already a low margin business. The customer to whom the cost would be passed is most often the employer, and further premium increases would be likely to hasten the move to self insurance, thus defeating the purpose of the initiative. A tax on hospitals was thought to be undesirable because some states were already employing this method to create a pool of money for care for the medically indigent. In addition, such an increase in hospital costs would not be budget neutral, and would likely be passed on to the consumer. Expansion of outpatient coverage would not be budget neutral either for the federal budget or for overall health care spending.

In view of the wide variety of primary care teaching programs and of existing and potential sites for ambulatory training, the committee believes that no single approach to overcoming financial barriers will solve the financing problems of all primary care programs. Rather, the committee sought to develop a group of recommendations that together would have a significant positive impact on the ability to establish high quality, appropriate primary care GME programs.

Academic Leadership

The influence of academic leadership in helping training programs to develop in innovative and useful ways should not be underestimated. Committed leaders have had significant success in overcoming financial barriers and establishing

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arrangements for training primary care residents in ambulatory settings. These leaders also have an important function in developing the professional values and mores that will encourage young physicians to enter primary care specialties with an understanding of their place in the health care system, and with the respect that will sustain them throughout a career in primary care. ***The committee encourages deans and faculty members to emphasize the importance of primary care ambulatory training, and urges the implementation of academic systems that reward those who provide role models for future generations of primary care physicians and devote time to developing curricula and teaching skills needed to make training in ambulatory settings a useful and positive experience.***

Efficient Use of Training Resources

The committee was convinced that the efficiency with which outpatient training sites are operated makes a significant difference in the financial health of the training program. Such factors as patient volume and flow, the use of nonphysician health personnel, and the effectiveness of bill collection are worthy of managers' attention. ***The committee believes that budgeting and planning for primary care ambulatory training sites should take into account the need to develop effective clinic management. In addition, to the extent that economies of scale can be achieved by the joint use across specialty lines of facilities and other resources, these cost savings should be sought and interspecialty barriers lowered.***

Physician Payment Reform

> Reimbursement for patient care services is potentially the most powerful financial policy instrument available for influencing physician's career decisions and the medical education system....Reimbursement ... affects all health care providers on a continuing basis (Sloan, 1980, p.57).

Much of the care provided by primary care physicians for their patients is paid for at a relatively lower price than the services provided by other specialists. Many have suggested that some services, for example surgical and diagnostic services, are relatively overpaid while such services as cognitive and preventive care are relatively underpaid. In order to correct these inequities, as well as to change the financial incentives that may result in patients receiving inappropriate care, a fee scale has been developed that is based on the costs of resources (including time) used to provide a unit of service. This fee scale, the Resource

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Based Relative Value Scale, has been proposed as the basis for Medicare physician payment by a commission created to advise Congress on the reform of physician payment methods. The commission, also charged with restraining the rate of Medicare cost increases, developed a Medicare budget neutral fee schedule under which internal medicine and family practice physicians are expected to increase their income from Medicare, while some specialties would experience a decrease. However, volume control mechanisms may be needed to sustain budget neutrality. In addition, confining Resource Based Relative Value Scale payment to federal programs affects only a portion of physicians' incomes. There is a possibility that total private sector physician service costs will increase if primary care charges rise to the level paid by Medicare, and procedure charges continue at the current level or even rise to make up for lost Medicare income. Thus, to achieve health care budget neutrality and to bring pediatricians into the fee schedule, all payers should adopt a resource based relative value scale payment system. This will also have the effect of redistributing more than only the Medicare portion of physician income.

The committee supports the proposal that Medicare adopt a resource based relative value scale method of payment for physicians, and recommends that all payers adopt such a payment scale.

The implementation of a physician payment system using a resource based relative value scale will have several effects. The financing of primary care GME in ambulatory settings will be facilitated by an increase in patient care revenues from sponsored patients, and the improved earnings ability of primary care faculty will increase the ability of faculty practice plans to support teaching physicians. In addition, as the earnings of primary care physicians increase and the differential between the primary care specialties and other specialties decreases, the economic incentives that deter some physicians from entering primary will diminish. To the extent that economic considerations are a determinant of specialty choice, diminishing negative incentives will increase the number of primary care physicians and help rectify the imbalance in the physician labor force between primary care and non-primary care specialists. Finally, the adjustment of fees will signal an appreciation of the importance of primary care services and should enhance the standing of those specialties.

Medicare Direct Graduate Medical Education Payment

Medicare payment for the direct costs of medical education is based on the number of full-time equivalent residents in a hospital, multiplied by a hospital-specific amount per resident. However, a proposed rule would introduce a weighting factor that diminishes the payment for a resident who has passed the

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initial residency period (the period of board eligibility plus one year, not to exceed five years). Thus, for example, internal medicine subspecialties receive full funding for four years—three years prerequisite for the general internal medicine program plus one additional year. The second year of subspecialty training has a reduced weight factor because it exceeds the initial board eligibility plus one year. For surgical specialties, where five or more years are required for board eligibility, only the first five years receive the full weighting (Federal Register, 1988). Thus, Medicare's direct GME payment will not only recognize the direct costs of training, but by incorporating financial incentives—reduced payments for subspecialties that are generally oversupplied—it will become a tool of physician manpower policy that has the potential of altering the composition of the physician workforce.

The committee suggests building on this precedent by shaping further incentives in the Medicare direct GME payment. ***The committee recommends an adjustment to the Medicare payment for the direct costs of GME that would create an incentive to establish residencies in primary care and place those residents in primary care ambulatory settings. The mechanism should be a differential in the full-time equivalent calculation between primary care residents and other residents. Residents in general internal medicine, general pediatrics, and family medicine should receive a higher weighting factor than other residents. Primary care residents who spend 25 percent or more of their time in a primary care ambulatory setting (not including specialty clinics) would receive a larger weighting factor.***

The committee was unable to calculate the weighting factors that should be applied in order to achieve its goal of creating a sufficient incentive to have an impact on the numbers and sites of primary care residencies. Although some data on hospitals' direct per-resident costs exist, there is no available itemization by specialty. Moreover, 1984 data indicate a wide range ($7,500 to $187,500) in hospital per-resident costs, much of which is not yet explained (Council on Graduate Medical Education, 1988). The committee supports the recommendation of the Council on Graduate Medical Education that a study of the variation in per-resident direct costs be carried out expeditiously. The findings of this study, and further analyses of data pertaining to the Medicare direct GME payment, should provide a basis for the development of incentive weighting factors. However, if such studies cannot be accomplished with alacrity, weighting factors should be introduced and adjusted as suggested by monitoring of the outcomes.

The committee believes that the incentives in their recommendation both will make the provision of primary care residencies more attractive to hospitals and generate revenues needed for the development of quality training programs in

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community practice sites. In addition, the committee believes that it is reasonable to offer extra support to needed specialties while directing small amounts of resources away from those that are better financed and for which the supply is considered to be more than adequate. The committee considered the implications of making incentive payments directly to department chairmen or others, but concluded that the hospitals must accept responsibility for the entire residency program. In so doing the hospital would respond to the financial incentives by making the shifts to true primary care residencies that the committee seeks, and utilize the additional revenues that accrue to them by helping the development of appropriate training sites. If necessary the additional revenues could, in part, support personnel needed to replace resident time lost to outpatient training.

Medicare Indirect Graduate Medical Education Adjustment

In its review of the major sources of GME funding, the committee directed its attention to the Medicare indirect medical education adjustment as a potential source of funds that might be reallocated to support primary care education. However, for several reasons the committee decided not to suggest radical changes in this item. For example, the revenue from the indirect adjustment is of major significance to some hospitals that provide large amounts of uncompensated care. However, since Medicare's indirect GME payment is a recognition of the costs of education, it is appropriate that hospitals use some of this revenue to support the primary care ambulatory care services that are an essential cost of training primary care physicians. ***The committee urges hospitals to commit a portion of the revenue from the Medicare indirect GME adjustment to direct financing of services at community-based ambulatory sites used for training primary care physicians***.

The Medicare indirect medical education adjustment was originally developed to compensate for a number of factors that increase the costs of teaching hospitals but are not directly attributable to the support of residents or faculty. Such costs derive from a variety of factors such as the test-ordering behavior of residents. Evidence suggests that outpatient sites of residency training experience costs associated with teaching activities similar to those recognized by the Medicare indirect medical education teaching adjustment.

The committee recommends that Medicare include in the calculation of the indirect medical education adjustment time spent by primary care residents in all primary care ambulatory settings.

This recommendation, which is not budget neutral, would extend the Medicare indirect medical education adjustment to all primary care outpatient

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sites, making additional money available to help support the costs of training in those sites.

State and Local Roles

The committee recognized the importance of state funding of GME generally, and in funding state schools and family practice programs in particular. State Medicaid programs also can play an important role in enabling primary care ambulatory training to remain financially functional. ***The committee encourages Medicaid programs that do not now support GME to follow Medicare GME payment policies***. However, the committee appreciates that states and localities face budget pressures that are often no less severe than those faced by the federal government. In particular, the committee applauds the expansion of Medicaid to increase the coverage of pregnant women and children, and believes that financing such services is a high priority.

By some estimates, the nation now faces an insufficient supply of primary care physicians, which already is reflected in some states. Case studies indicate that state GME capitation payments contribute appreciably to the ability of the funded primary care residencies to support primary care ambulatory residencies. ***The committee recommends that states assess their need for primary care physicians, bearing in mind the special roles of these physicians. States that determine that an increased supply of primary care physicians would benefit their citizens, and states that find a potential shortage of primary care practitioners, should increase their financial support of GME and widen their support to include general internal medicine and general pediatrics as well as family practice***.

To encourage involvement of state and local governments, training programs should take the initiative in finding ways to exploit the natural affinity of primary care training and services to medically needy populations. Case studies offer numerous examples of ways in which committed leaders have negotiated arrangements mutually beneficial to ambulatory training sites and to states or localities seeking cost-effective care for specific populations. Such arrangements can offer a stream of new patient care revenues needed to make feasible the support of residents in an ambulatory clinic. In trying to encourage state and local support of primary care GME, programs must be ready to demonstrate the ways in which support of specific GME components or services will be beneficial to the relevant governments. Program directors should become aware of local needs, such as health care for the homeless, which their ambulatory clinics may be uniquely able to fulfill. ***The committee recommends that primary care GME programs assume the responsibility of informing legislators and agencies***

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of ways in which primary care ambulatory GME could provide services that would benefit needy populations as well as the education programs. The programs should also make efforts to ensure continued support by maintaining contact with the relevant agencies and legislators through such means as newsletters.

Grants

The committee looked at the uses of short terms funds that can be obtained from government and private grants. Bearing in mind that residency programs cannot make needed long-range plans in the face of insecure funding, grants should not be regarded as protracted operating support. Rather, grants are important catalysts in the initial development of ambulatory sites, in supporting innovative educational arrangements, in enabling creative financial arrangements to be developed, and in helping develop the faculty needed to initiate a quality program. ***The committee recommends that the funds available through Title VII of the Public Health Service Act be targeted to the development of innovative model programs and demonstration sites from which others can learn of new ways of arranging and supporting quality primary care ambulatory training programs. In addition, these grant programs can continue to play a role in faculty development in the early years of programs. Private foundations, both local and national, interested in medical education and the provision of health services, should add their support to such activities, thus multiplying the impact of the limited federal grants funds that are available***.

In conclusion, believing that quick action is needed to ensure the future supply of appropriately trained primary care physicians, the committee has developed the foregoing recommendations for ways of improving the ability of educational programs and health care providers to support GME for primary care physicians in ambulatory settings. These recommendations are intended to motivate several different entities to act decisively and expeditiously; entities to whom the committee addresses recommendations include federal, state, and local governments, hospitals, and private foundations. This dispersion of responsibility for making needed changes reflects the committee's belief that GME is of benefit to, and is correctly the concern of, numerous participants in the health care system. The committee's recommendations are not addressed to all those whose influence could appropriately be brought to bear on the problem, nor do the recommendations cover all possible solutions. Rather, the recommendations are intended as first, immediate, steps in a direction that the committee believes must be pursued.

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Appendix A

Program and Proceedings of a Workshop

Held By

The Committee to Study Strategies for Supporting Graduate Medical Education for Primary Care Physicians in Ambulatory Settings

Institute of Medicine
April 17 and 18, 1989

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PROGRAM

April 17 and 18, 1988

8:30 am WELCOME AND INTRODUCTION

Samuel O. Thier, M.D., President, Institute of Medicine

Daniel D. Federman, M.D., Chairman, Committee to Study Strategies for Supporting Graduate Medical Education in Primary Care

9:00 am CHARACTERISTICS OF PRIMARY CARE GRADUATE MEDICAL EDUCATION IN THE AMBULATORY SETTING

Evan Charney, M.D., Professor & Chairman, Department of Pediatrics, University of Massachusetts Medical School

Jack M. Colwill, M.D., Professor & Chairman, Department of Family & Community Medicine, University of Missouri-Columbia

Jordan Cohen, M.D., President APDIM, Dean, School of Medicine, SUNY at Stony Brook

Fred Tinning, Ph.D., President, Kirksville College of Osteopathic Medicine & Chairman, Board of Governors, Association of Colleges of Osteopathic Medicine

Moderator: Richard E. Rieselbach, M.D., Associate Dean, University of Wisconsin Medical School

10:30 am COST AND REVENUES FOR GRADUATE MEDICAL EDUCATION

Judith R. Lave, Ph.D., Professor of Health Economics, University of Pittsburgh

Ruth S. Hanft, M.A., Research Professor and Health Policy Consultant, George Washington University

Robert Derzon, M.B.A., Lewin/ICF, Inc.

Moderator: Sheldon S. King, President, Stanford University Hospital

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11:30 am LESSONS FROM PROGRAM DIRECTORS

Larry A. Green, M.D., Professor & Chairman, Department of Family Medicine, University of Colorado Health Sciences Center

Joel J. Alpert, M.D., Professor & Chairman, Department of Pediatrics, Boston University School of Medicine, Chief of Pediatrics, Boston City Hospital

Steven A. Wartman, M.D., Ph.D., Director of the Division of General Internal Medicine, Brown University

Moderator: Henry W. Foster, Jr., M.D., Professor and Chairman, Department of Obstetrics & Gynecology, Meharry Medical College

2:00 pm ALLOCATION OF RESOURCES AT THE INSTITUTIONAL LEVEL

Sheldon S. King, President, Stanford University Hospital

Norman G. Levinsky, M.D., Professor & Chairman, Department of Medicine, Boston University Medical School

John J. Collins, Jr., M.D., Vice President for Professional and Physician Services, Mercy Health Services

Harry N. Beaty, M.D., Dean, Northwestern Medical School

Moderator: Daniel D. Federman, M.D., Dean for Students and Alumni Professor of Medicine, Harvard Medical School

3:00 pm BREAK

3:30 pm POLICY OPTIONS

Sandra C. Peinado, M.D., Fellow, General Internal Medicine, University of Pennsylvania

John Eisenberg, M.D., M.B.A., Sol Katz Professor of General Internal Medicine, University of Pennsylvania

Moderator: Daniel D. Federman, M.D., Dean for Students and Alumni Professor of Medicine Harvard Medical School

5:00 pm ADJOURN

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APRIL 18, 1989

8:30 am POLICY OPTIONS, Continued

Peter Bouxsein, J.D., House Subcommittee on Health and the Environment

John K. Kittredge, Former Executive Vice President, The Prudential Insurance Company of America

C. Ross Anthony, Ph.D., Associate Administrator for Program Development, Health Care Financing Administration

Arthur M. Fournier, M.D., Associate Dean for Community Health Affairs, University of Miami Medical School

12:00 pm ADJOURN

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INTRODUCTION

There is a growing consensus that changes in the way in which health services are provided require that residency programs for primary care physicians increase their emphasis on ambulatory care experiences in order to prepare physicians for the real world of primary care practice. There is also a growing sense that new strategies are needed to enable these programs to overcome the financial disadvantage at which they operate, compared with other medical specialties. The Institute of Medicine, with support from the Josiah Macy Jr. Foundation and the Health Resources and Services and Administration of the Department of Health and Human Services, appointed a committee to plan a workshop and recommend strategies for surmounting the fiscal constraints that bind primary care training programs. By bringing together experts from primary care education and practice, health care institutions, federal agencies, insurance and health care financing and others, the workshop was to be both a useful event for the participants and provide the basis for the committee's deliberations. The workshop was held in Washington, D.C., April, 1988.

Summaries of presentations and discussion at the workshop follow.

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CHARACTERISTICS OF PRIMARY CARE GRADUATE MEDICAL EDUCATION IN THE AMBULATORY CARE SETTING

Primary Care Residency Training in Pediatrics:
Current Status, Current Issues, Suggested Solutions
Evan Charney, M.D.
Professor and Chairman
Department of Pediatrics
University of Massachusetts Medical School

Demographics of Pediatric Training and Practice

There are currently 230 fully approved three-year pediatric residency programs in the United States with just over 6,000 residents in training. Approximately half of these programs are in University hospitals and half in community hospital settings (with varying degrees of university affiliation). Of the 35,000 pediatricians in the United States (physicians who limit their practice to children and adolescents) 80 per cent are in office-based primary care practice; one-fifth of those physicians devote a portion of their time to subspecialty as well as general pediatrics. Fifteen per cent of pediatricians are in full-time subspecialty practice and, except for the age specific areas of neonatology and adolescent medicine, are in areas comparable to internal medicine (e.g. organ system specialties, infectious disease, immunology). The remaining five per cent of pediatricians are in public health and administrative positions.

The Setting of Residency Training

The hospital setting in which pediatric residency is based presents certain problems for primary care education:

1. On hospital inpatient services, children have illnesses more complex and more severe than in the past. Attending physicians are increasingly specialized, and children are often segregated by disease category to more efficiently provide that care (separate intensive care units for neonates and older children with full-time attending supervision, inpatient units divided by subspecialties, emergency departments staffed by specialists rather than generalists). The technology appropriate to such care becomes correspondingly more complex as well. Moreover, the

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shortened inpatient length of stay further reduces the time available to absorb (much less metabolize) the available learning.

2. Patients in most general pediatric clinics are disproportionately drawn from poor or socially disorganized families. Those children cared for in the emergency department tend to have more acute problems than do most patients in practice, and usually are unknown to the physician providing care. Those in subspecialty clinics have more complex or unusual conditions. In fact the management style with patients with the same clinical condition often varies between office practice and hospital practice. For example, the emergency department physician commonly orders far more extensive laboratory investigation for a well-appearing but febrile one year old than does the office-based physician who knows the child and family. While each style is probably appropriate to its own setting, trainees may get mixed messages about what is optimal or correct.
3. The community-based practitioner is less visible (perhaps less welcome) within the hospital and emergency service than in the past. The average practicing pediatrician hospitalizes fewer children now and, therefore, spend less time in the hospital, except for full-term newborn care. As a result, when a child is hospitalized, pediatricians are less able to direct that care without consultant help than they were ten or twenty years ago.

The common denominator of these changes is that in 1989 the average pediatric resident is less likely to observe the average primary clinician functioning knowledgeably and comfortably in the hospital setting than was true in the past.

Medical Education as an Apprenticeship Model

Graduate medical education is based on an apprenticeship model, as opposed to the classroom/seminar approach typical of law and engineering schools, for example. The core philosophy of this education is to expose trainees to appropriate patients, in appropriate settings, taught by role-model faculty. This has worked well, by and large, for the trainee who will go on to become a consultant pediatrician, and appears to provide a reasonable foundation for further subspecialty training. I believe it has worked less well for general pediatric education for the reasons stated above. While general or ambulatory pediatric divisions have been established within

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most teaching programs, The problems of a hospital environment remain. As noted, the patients in hospital ambulatory settings are often poor, with complex social and psychological problems that would tax the most skilled practitioner. Moreover, the "continuity practice" they are enrolled in is an artificial construct, an educational device that has little resemblance to most practice settings. In contrast, we do not place residents in artificial intensive care or emergency room settings for their education and expect that they will learn principles to apply later in "real" practice: we place them in functional care systems practicing alongside skilled clinicians. The point here is that primary care practice within the hospital may not resemble community-based primary care practice either in setting, patient mix, or faculty.

The Residency Review Committee

The Special Requirements for pediatric residency programs have been modified (revised in 1985 and 1990) with the goal of making standards more explicit and more stringent in several areas. Primary care training must now include one half-day per week in a continuity practice in all three years of training, a more clearly defined experience in child development, behavior and adolescent medicine, and a minimum of six months in general ambulatory settings. With the added continuity clinic time the mandated minimum general ambulatory time now comprises 27 per cent of the three-year residency. However, other changes in the Special Requirements will have an impact on general pediatric training; there is an explicit requirement for more subspecialty faculty available at the parent institution, and the hospital inpatient setting is more clearly defined as a tertiary referral center for children with severe and diverse illness. The result will be that smaller programs (with fewer subspecialists and less complex inpatient services) may have difficulty meeting standards, which will lead to an increase in the proportion of pediatric residents trained in large tertiary care hospitals. What will be the effect of these changes on primary care education? Although it is not valid to assume that high quality primary care education is always characteristic of small training programs, it is clear that a general pediatric orientation is not easy to cultivate in the climate of a tertiary care center. Moreover, pediatric department chairs are subspecialists for the most part. Although they have a strong commitment to pediatricians providing primary care for children, the demands of running a service, teaching, and conducting research in a tertiary care environment make issues of primary care education seem less immediate and compelling.

Challenges of Primary Care Education

Our challenge is to develop education settings and curricula (in the continuity practice and in the community) to accomplish for primary care what has been achieved for subspecialty education. Simply stated, trainees need to observe

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successful practice by skilled clinician-teachers in a variety of situations applicable to practice.

In office practice: residency programs need either to establish (potentially under hospital auspices) or affiliate with real-life, functional pediatric practices. There are a variety of such settings which can be utilized, depending on where the residency program is located. These include urban group practice with indigent or mixed social class patients; suburban group practice with predominantly middle class patients, rural practices, which in addition to primary care, may involve a consultative role with family practitioners, and a major role with hospitalized children. Such teaching practices should be able to demonstrate the pediatrician's role with children and adolescents with chronic medical conditions, with behavioral and developmental problems, as well as with parent and child preventive health education. The role of allied health professionals and office staff, organization of practice, medical records, consultation and referral decisions to both medical and psychosocial resources are all proper subjects for learning.

In community settings: Primary care practitioners (optimally) play important roles as consultants in community settings outside of their office and trainees should have the opportunity to observe and learn these roles. These occur, for example, in day care facilities, schools (elementary through college level), settings for children with chronic handicapping conditions, and detention facilities for juvenile offenders. The role of the generalist in a community hospital without housestaff is a very different one from the practicing physicians whose principal hospital is a regional tertiary center, with available residents and subspecialists.

Although some of these skills can be learned in short block rotations in office practice, there is considerable value to learning how skilled primary care physicians manage problems over time, and that is best achieved by a longitudinal, several year experience (particularly for the primary care practice). This strategy requires identifying promising clinician/teachers within the community, and providing them a structured (and ongoing) educational program to grow as teachers. They need to be compensated for the time they spend teaching and not practicing. I believe it is more logical to place residents in "educationally prepared" community settings than to bring practitioner-teachers into tertiary settings to observe and teach residents in hospital clinics.

These comments are not meant to ignore the role of subspecialists. They are vital to graduate education for primary care and, in general, I think subspecialty teaching is of high quality. At present, subspecialists play a vital role in conveying to pediatric residents a body of knowledge about disease and up-to-date diagnostic, technical and management skills in dealing with children with complex illness. However, if trainees only observe neurologists caring for children with seizures,

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endocrinologists caring for diabetics, and psychologists caring for children with behavioral disturbances, a powerful message is communicated to the trainee about who provides optimal care. Our education needs to occur, at least in part, where excellent generalist teachers are seen to play a central and satisfying role with such children and their families.

Funding Constraints

Funding constraints present a realistic barrier to implementing the changes in primary care education outlined above. In hospital inpatient and ambulatory settings patient care reimbursement provides a significant portion of resident and faculty salaries. If residents spend time outside of the hospital in community settings alternate payment mechanisms need to be devised for resident (and faculty supervision) time. Hospital services will continue to require staff time, and either more residents need to be recruited (but there are a limited number of American medical school graduates available) or new allied health manpower (physician assistant, nurse clinician) need to be trained. Moreover, community-based primary care, child development and behavioral services tend to be poorly reimbursed, without considering the additional educational expenses required to teach n those settings. Current Title VII funding for primary care residency training has allowed for the funding of these activities (apart from usual hospital sources) and can provide valuable data on the costs of such education.

In summary, pediatrics retains its strong commitment to primary care: the majority of pediatricians are engaged in that activity. Changes in the Residency Review Committee Guidelines for pediatrics should enhance primary care education, but may tend to concentrate residency training in larger tertiary care centers where such educational experiences must compete with the service demands of complex patient care. A variety of curricular innovations are needed to strengthen primary care education in pediatrics, and the flexibility to develop and assess these curricula is highly desirable. Funding support to place trainees in functioning primary care settings in the community (and prepare the appropriate faculty) is required, which will necessitate some restructuring of present reimbursement mechanisms.

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GRADUATE EDUCATION IN FAMILY MEDICINE - ITS AMBULATORY EMPHASIS

Jack M. Colwill
Professor and Chairman
Department of Family and Community Medicine
University of Missouri-Columbia

Two decades have passed since the American Board of Family Practice was established. This new specialty of family practice developed as a result of a national consensus that the nation faced a shortage of primary physicians and of rural physicians. With state and federal support, the number of residents increased almost exponentially throughout the 1970's.[1] (Figure 1) Now, during the 1980's, the number of residents has plateaued at 12% of all first-year residents. Despite the impact of these residency programs, the total number of family physicians in the U.S. is not increasing significantly because of the high retirement rate of aging general practitioners. The Council on Graduate Medical Education, COGME, indicates that we continue to have a shortage of family physicians and probably of other primary physicians. Despite this shortage, family practice residency programs are not expanding.

In this setting I suspect that the greatest concerns of family practice educators are for the declining interest among medical school graduates in primary care careers and the fiscal vulnerability of current family practice residency programs. In the following, I shall describe some of the characteristics of family practice residency programs and shall reflect upon the concerns that I have outlined above.

The three-year residency curriculum in family practice is designed to mirror the practice of a primary physician who renders patient care services to patients and families of all ages. Kerr White's classic 1961 paper, "The Ecology of Medical Care," demonstrated that in a given month 750 of any 1,000 patients will have an illness.[2] (Figure 2) Of this group, 250 will seek a physician, 9 will be admitted to a hospital, 5 will receive consultation, and only 1 admitted to a University Medical Center. The clinical practice of a primary physician deals with the primary care encounters, the primary care admissions, and the secondary level consultations. Consequently, educational programs in family practice are designed to emphasize these areas.

Conceptualized another way, the box in Figure 3 encompasses the content information of medicine. The vertical lines separate the boundaries of the traditional clinical disciplines. The area above the horizontal line reflects what is known about disease, and that below the line that which is known about health. Common problems fall closer to the horizontal line. These problems constitute the

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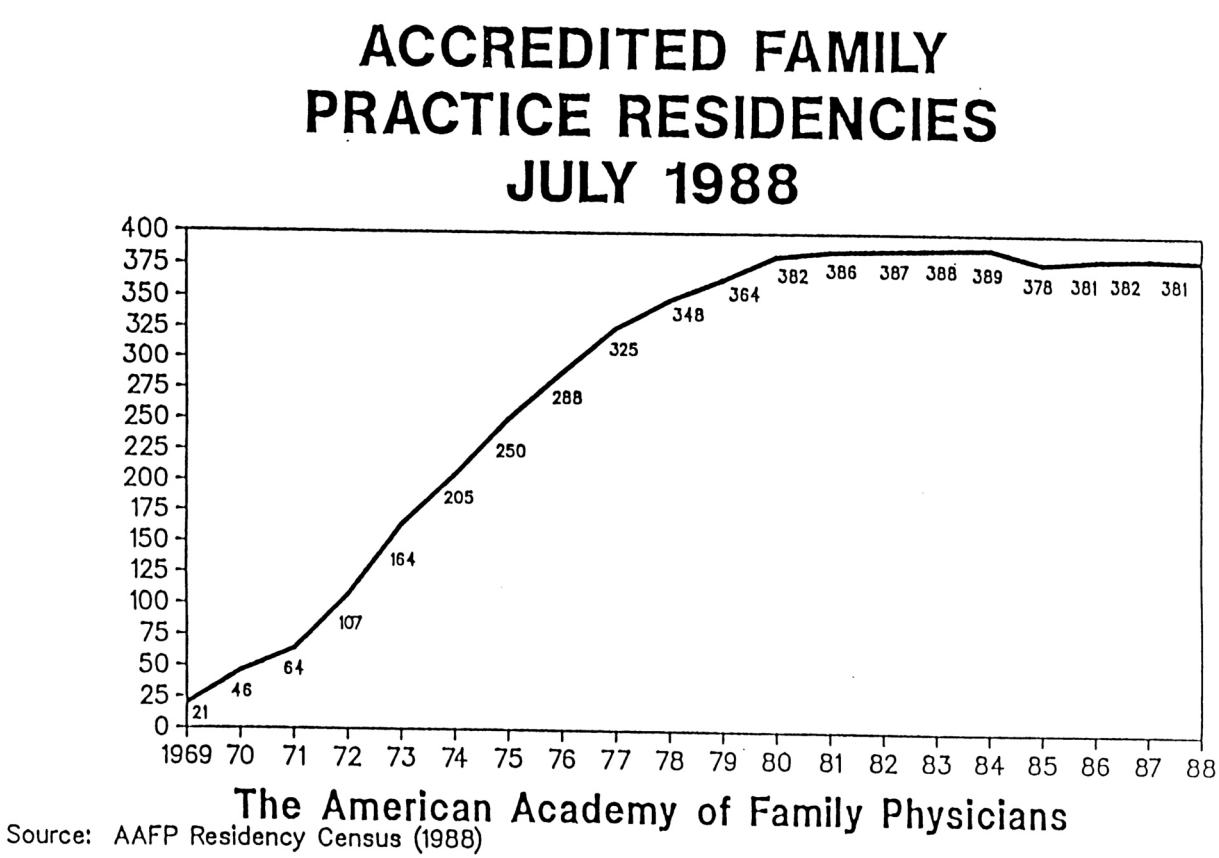
Figure 1



Source: AAFP Residency Census (1988)

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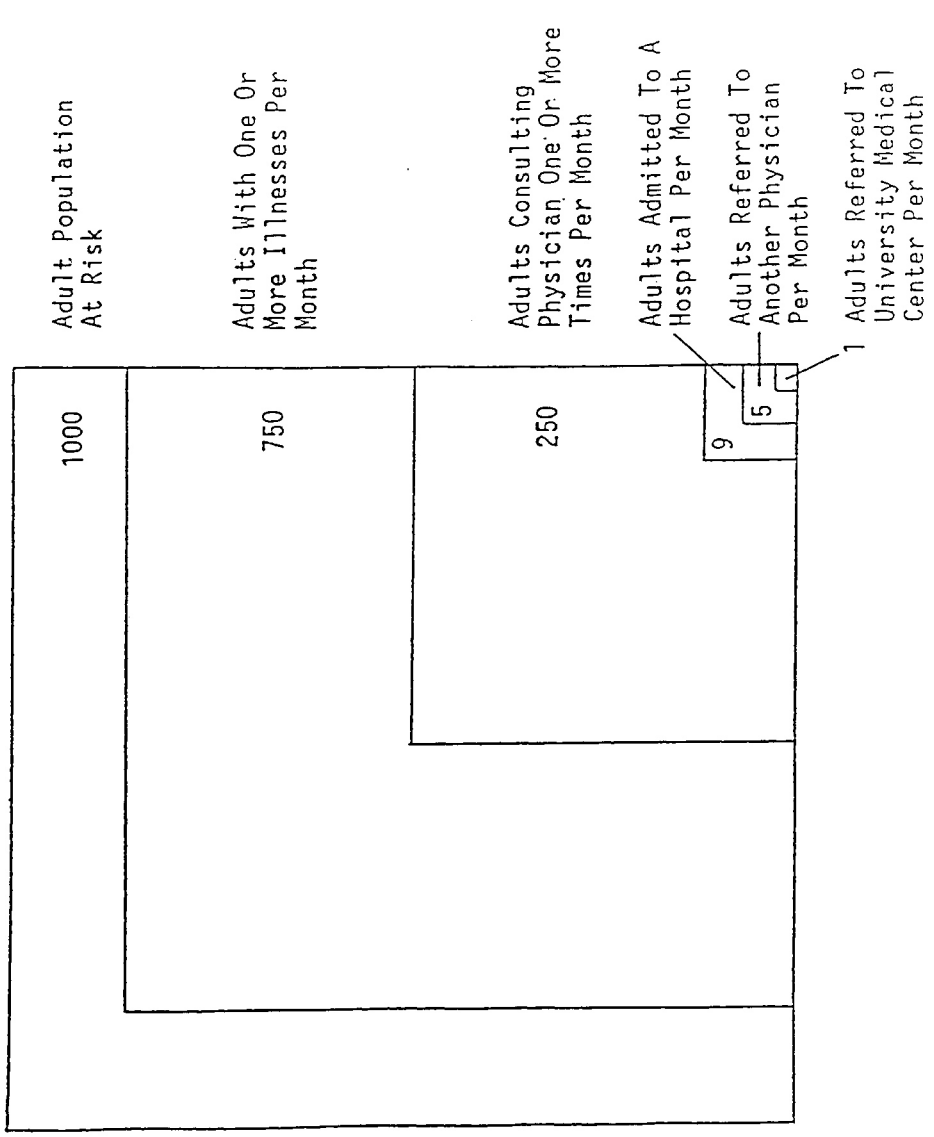

Figure 2

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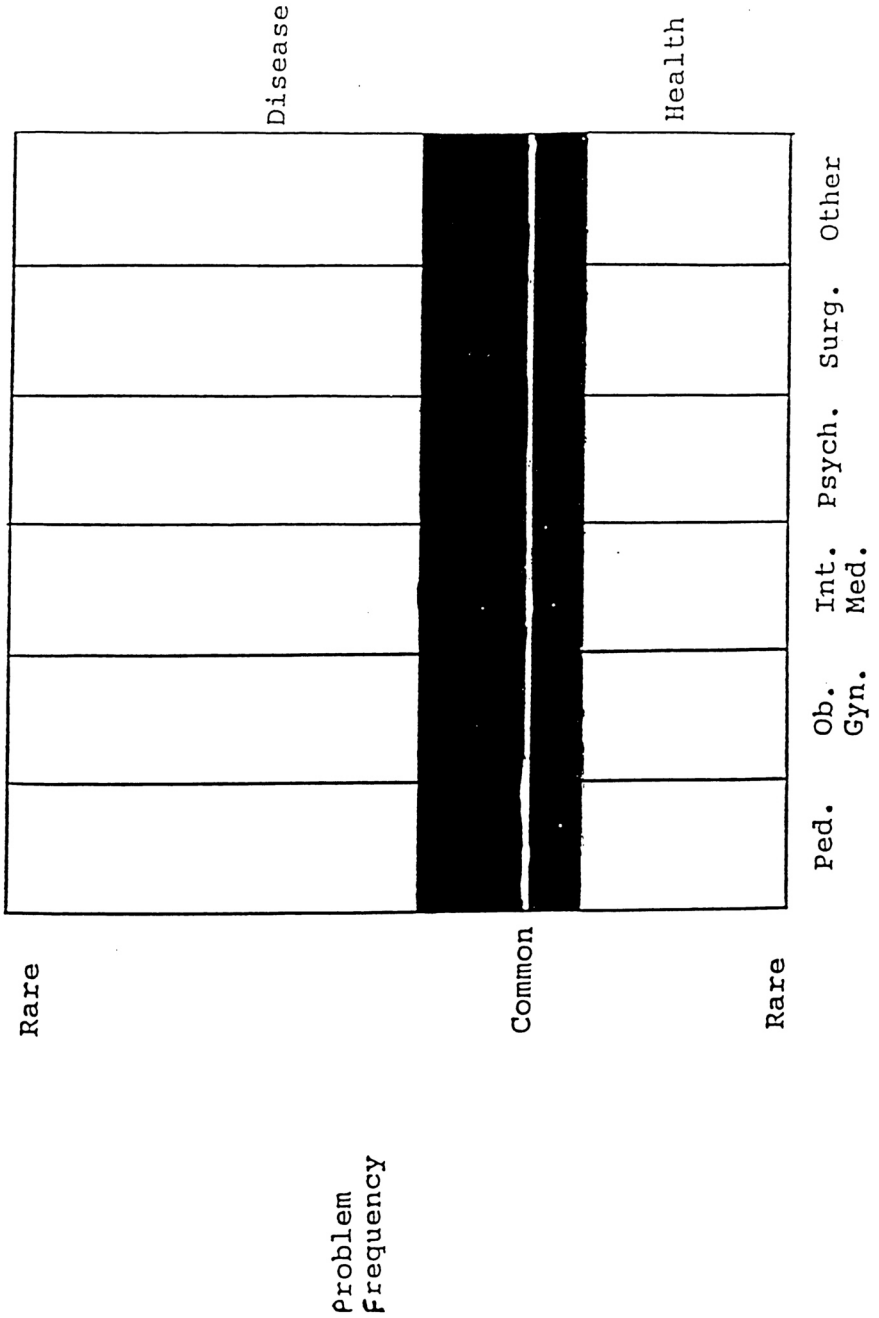
Figure 3

EDUCATION AND PRACTICE OF A FAMILY PHYSICIAN



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vast majority of patients seen by a primary physician. Further, the problems seen by the primary physician bridge many of the classical disciplines. Consequently, the practice of a family physician schematically can be represented by the dark area in Figure 3. Likewise, educational programs in family practice are designed to provide competence in the more common ambulatory and secondary level problems.

The three-year residency curriculum in family practice is demonstrated in Figure 4. The unique core of the residency lies in each resident's continuity practice in the practice center, which constitutes approximately 30% of scheduled daytime activities. Each resident provides longitudinal care for a panel of families over the three years of residency training. The proportion of time within the continuity practice increases each year, so in the fourth year it typically totals at least 40% of daytime activity. In addition, while programs vary markedly, in a typical residency approximately 40% of scheduled time is based on inpatient services in specialties such as internal medicine, pediatrics, surgery, obstetrics, and family practice. The remaining 30% is based in ambulatory specialties including dermatology, orthopedics, ENT, gynecology, emergency medicine, etc.

Characteristics of problems seen in the primary care ambulatory setting differ in major ways from those seen in the inpatient setting. Problems tend to be common, early, subtle, and to fall within the domain of many clinical disciplines. Psychosocial problems constitute a significant part of the practice as do chronic problems and health maintenance. The emphasis of education in the continuity practice is on the care of the patient in the context of the family and its social and economic environment. The role of the primary physician is that of primary provider, coordinator of medical services, and increasingly the financial manager of care.

Faculty supervision in the practice center is highly labor intensive in comparison with a typical inpatient service. Residency review requirements in family practice mandate that a faculty member without other responsibilities be available full-time to supervise residents in the ambulatory setting. The guidelines of the Residency Assistance Program, (RAP), sponsored jointly by the family practice organizations stipulate that in a quality program faculty members should supervise no more than four residents at a time. This can be contrasted with an inpatient service where a faculty member may supervise a large busy inpatient service

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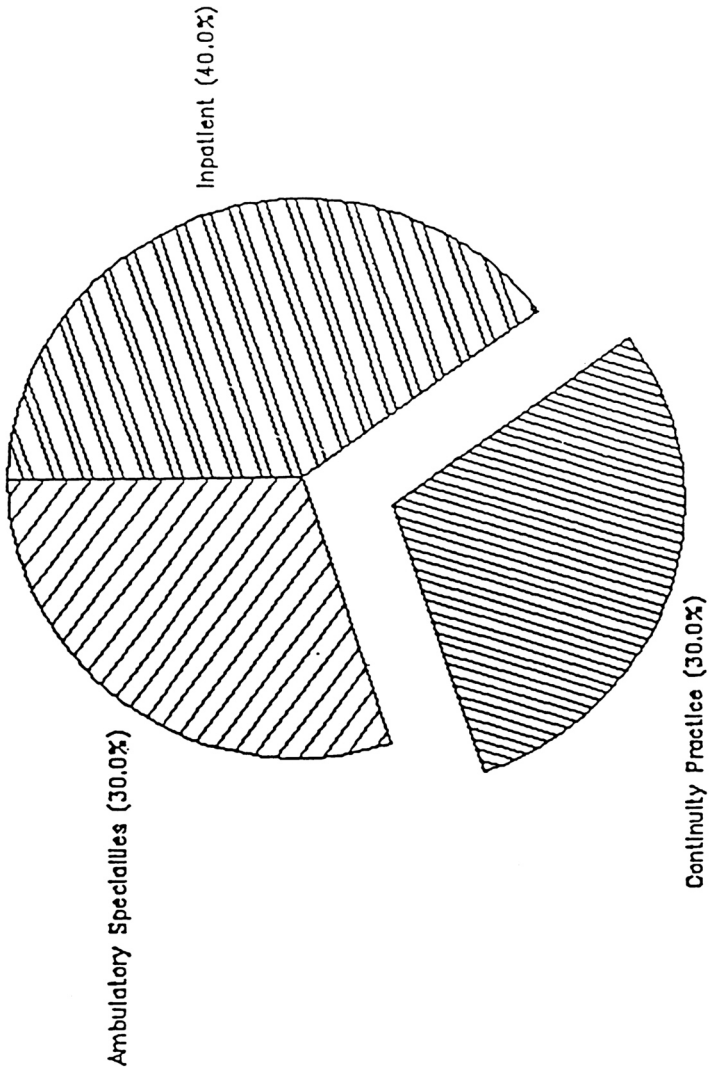
Figure 4

FAMILY PRACTICE RESIDENCY EXPERIENCE



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with multiple residents and students and typically spend only two to three hours a day in the attending role.

The typical family practice residency program is relatively small, adding six residents annually to a three-year program. Although residencies in most specialties are based in large teaching hospitals, most residencies in family medicine are located in community hospitals. (Figure 5) In half of these community hospitals, family practice represents the only residency program. Even so, most programs are associated with medical schools. In 1988, 33% were operated directly by a medical school and an additional 55% were affiliated with one. Fifteen programs were based in the armed services.

One characteristic of family practice residency programs is the fiscal vulnerability of these residencies. This probably is a major explanation for the plateauing of residency positions in family practice in the 1980's. Family practice residencies vary greatly in their costs and sources of revenue. However, several studies suggest that a typical program divides its expenditures almost equally between the cost of faculty and administration, the cost of residents, and the cost of operating the family practice center.[3] (Figure 6) Sources of revenue vary markedly from program to program. For a typical program, revenue is approximately equally divided between hospital support, state and federal governmental support, and patient care income from the family practice population. (Figure 7) Federal training grants have been a small but nevertheless vital component of residency funding.

Residency program costs in family practice are probably less than those in many other specialties. Certainly, faculty salaries are less. Further, the cost of the family practice center is not great compared with the cost of an operating room, which is essential for other residencies. The difference is that the family practice center may not be essential to the operation of the hospital while the OR is highly essential for patient care.

Overhead costs for the family practice center exceed those of private practice, but probably are comparable to the costs of teaching clinics in other specialties. The well-known added "teaching" costs consist of the increased administrative, medical records, and patient care staffing costs common to all educational ambulatory settings.

The dilemmas for financing family practice residencies lie primarily on the income-generating side. Each of the three major sources of revenue, patient care, hospital support, and governmental support will be addressed.

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Figure 5

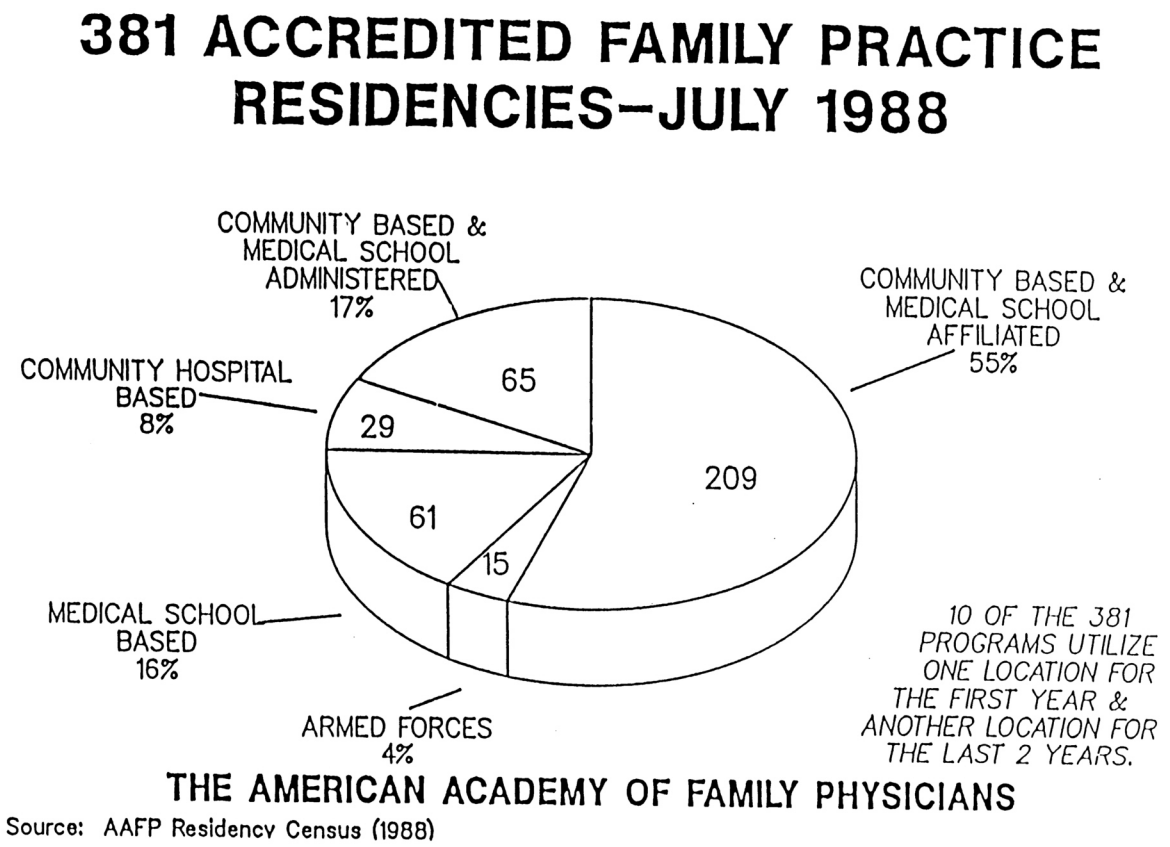

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Figure 6

Family Practice Residencies

Expenditures

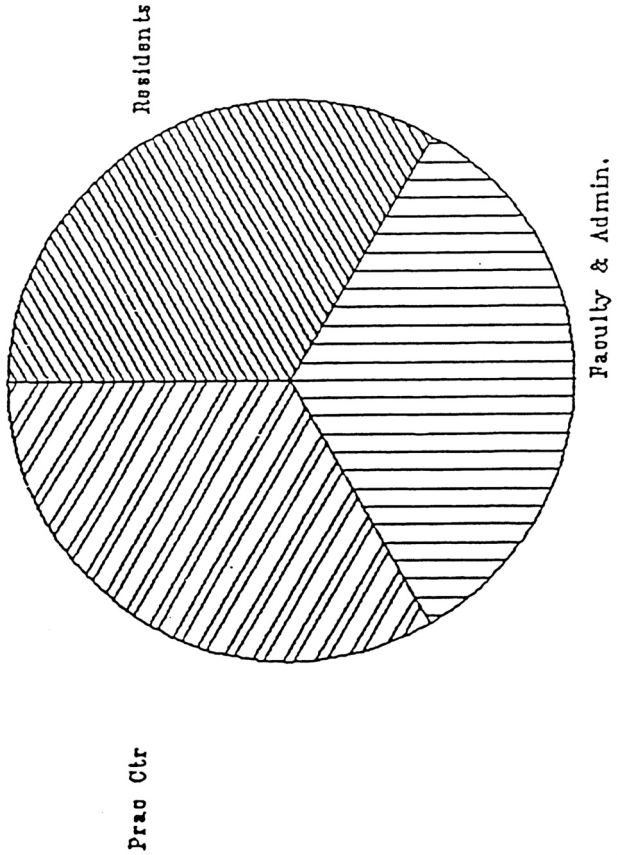

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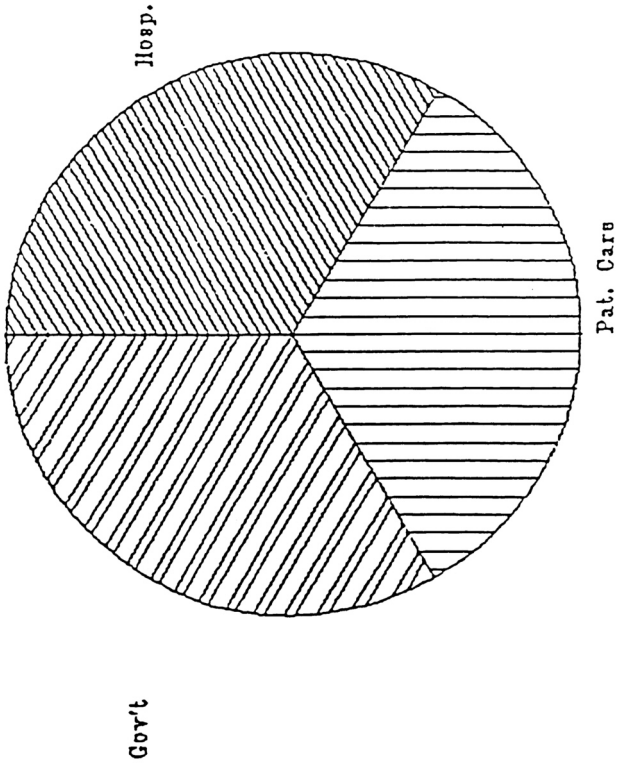
Figure 7

Family Practice Residencies

Sources of Revenue



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Patient care income for professional services to the family practice population is limited by a number of factors. In order to be competitive, charges typically mirror customary charges in the community. Charges are primarily for cognitive services. The patient mix includes individuals without health insurance and higher proportions of patients funded by Medicaid. As a result of the above, the overall collection rate was only 60% of gross charges for 10 programs sampled by the author for this presentation. Thus, in comparison with a physician in private practice, the nonprofessional overhead cost per patient visit is higher and the percentage of gross charges collected is marketedly less than in private practice. It is not at all surprising that on average the income from patient care services of a family practice residency program only approximates the nonprofessional overhead cost of operating the practice center.

The residency programs serve populations of all ages. Consequently, the proportion of services rendered to Medicare patients is relatively low. In the survey of 10 residency programs, I found that Medicare provided an average of only 13% of practice income. Further, the gross collection rate from services to Medicare patients after Medicare adjustments was less than for the practice as a whole in seven out of ten programs, averaging only 55% of gross charges. The average collection rate for Medicaid was only 40% of gross charges.

Typically, the hospital provides the largest single source of revenue for family practice residency programs. In turn, the hospital is reimbursed for its direct and indirect educational costs. Congress has now capped direct educational costs at an institution specific rate per resident and is now strongly considering further reductions in the indirect educational reimbursement. As this occurs, graduate medical education will progressively become a "loss leader" for the hospital. Hospitals will in all likelihood seek to reduce their financial commitments to graduate medical education. For the hospital, reductions in family medicine and other primary care residency support would be financially preferable to reductions in residencies which function in high revenue-generating areas of the hospital.

Family practice programs have been blessed with state and federal training support to a greater degree than primary care programs in internal medicine and pediatrics. Conversely, family practice residency programs have not had available to them the financial resources of the VA and the potential for internal shifting of patient care revenues from procedurally-oriented subspecialties. Approximately two-thirds of family practice residency programs do receive federal training grants and/or state support. This governmental support, both federal and state, has plateaued and indeed has decreased significantly when inflationary increases are taken into account. Further, inasmuch as training grants are competitive, they do not provide the stability of funding necessary to maintain programs over time.

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Thus, from the above it is easy to see that family practice programs have struggled simply to maintain the status quo. In the current fiscal situation, significant further expansion of these programs seems unlikely.

The declining interest in primary care careers is another area of great concern to all in primary care. The NRMP results for the past three years demonstrate that the total number of U.S. medical school graduates matching in primary care specialties has dropped by 970 graduates with a decline of 111 in pediatrics, 212 in family practice, and 647 in internal medicine categorical and primary care tracks. (Table 1) Further, the AAMC's Graduation Questionnaire suggests a declining interest in primary care careers among those entering internal medicine and pediatrics, which is associated with an increasing interest in the medical and pediatric subspecialties. (Tables 2 & 3) Thus, between 1982 and 1988, the interest in general internal medicine dropped from 14% to 8% of graduating medical students. That in pediatrics declined from 6 to 5% of graduating students, and interest in family practice dropped from 15.5 to 11.2. Total interest in primary care specialties dropped one-third so that only 24% of 1988 graduates planned primary care careers.

Even more distressing trends are apparent in family medicine. Utilizing data from the MCAT Questionnaire interest by entering medical students in family medicine dropped from 37% to 16% between 1978 and 1986. (Table 4) This fall is especially distressing in as much as Babbott's study of the 1987 cohort of U.S. medical school graduates demonstrated that 46% of those entering family medicine had planned to enter family medicine when they took the MCAT test.[4] Utilizing the above trends in family practice, Babbott's data, and data from the AAMC Graduation Questionnaires for general internal medicine and pediatrics from 1982 and 1988, I project that interest on the part of senior medical students in the three primary care specialties will drop from 36% of graduating students in 1982 to only 17.1% of students graduating in 1992. (Table 5) This projection anticipates a continuing rate of decline in each of the three specialties as reflected in the figures above. Hopefully, current trends will not continue and higher percentages of students will decide upon primary care careers during their medical school experience.

This data is relevant to the discussions of this conference. Obviously, the causes of the decline in interest in primary care careers are multi-factoral and will require multi-factoral solutions. One component of the solution appropriately would be to increase education of both medical students and of residents in internal medicine and pediatrics in primary care. Such an expansion has major fiscal implications, which are appropriately addressed in this conference.

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Table 1 NRMP Positions Matched by U.S. Graduates

	1986	1989	Percent Decline
Internal Medicine*	4067	3420	16
Family Practice	1680	1468	13
Pediatrics	1367	1256	8

* Includes Categorical, Medical Pediatrics, Primary Care.
Source: NRMP 1989 Results. National Resident Matching Program: Evanston, Illinois. March 1989.

Table 2 Specialty Preference U.S. Graduates (% Graduates)

	1982	1988	Percent Change
Family Practice	15.5	11.2	-28
General Internal Medicine	14.3	8.1	-43
General Pediatrics	6.2	5.3	-15
Total Primary Care	36.0	24.6	-32

Source: Association of American Medical Colleges. Medical Students Graduation Questionnaire. 1982 and 1988. Washington, D.C.

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Table 3 Preference for Medical Subspecialties (% Graduates)

	1982	1988	Percent Change
Internal Medicine Subspecialty	7.6	11.6	+53
Pediatrics Subspecialty	1.8	2.9	+61

Source: Association of American Medical Colleges. Medical Students Graduation Questionnaire. 1982 and 1988. Washington, D.C.

Table 4 Specialty Choice-Medical School Matriculants

	1978	1983	1987
Family Medicine	37%	24%	16%

Source: Association of American Medical Colleges. Medical College Admissions Test Questionnaires. 1978, 1983 and 1987. Washington, D.C.

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Table 5 Projection Specialty Preference 1992

	1982	1988	1992
Family Practice	15.5	112	8.2
General Internal Medicine	4.3	8.1	5.1
General Pediatrics	6.2	5.3	4.8
Percent Primary Care	36.0	24.6	17.1

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THE CASE FOR INCREASING THE EDUCATION OF GENERAL INTERNISTS IN AMBULATORY SETTINGS

Jordan J. Cohen, M.D.
President, APDIM
School of Medicine Health Sciences
SUNY at Stony Brook

Before considering why tomorrow's general internists should receive more education in the ambulatory setting, let's review our overall goals. Our aim is to educate general internists who can:

1. Establish strong, durable ties with patients and their families.
2. Deal definitively, competently, and confidently with most of the nonsurgical conditions of adults.
3. Manage complex as well as simple problems in the ambulatory setting.
4. Orchestrate cost effective utilization of allied health personnel, laboratory tests, community resources and, when necessary, consultants (i.e., function as "team captain").
5. Understand and incorporate into practice modern strategies for health promotion/disease prevention.

We have recognized for some time that these goals will be increasingly difficult to attain if we continue to depend on the inpatient setting as the primary educational venue. As we all know, wrenching changes have occurred in hospitals over the past decade or two and these changes have rendered hospitals incapable of providing an adequate classroom for primary care education. Examples of such changes are:

1. Pre-admission screening and effective utilization review resulted in a marked shift in the inpatient population towards much greater acuity. Many important conditions that fall within the traditional domain of internal medicine are simply no longer seen, or seen only rarely in the inpatient setting.
2. Pre-admission evaluation aimed at controlling hospital costs has resulted in a marked reduction in the number of diagnostic problems and in the number of decisions remaining to be made by trainees. Increasingly, patients are admitted to the hospital with well-defined problems and with diagnostic and treatment plans already established by the attending physician prior to admission. Such patients leave the trainee with little opportunity to hone their own professional skills.

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3. Early discharge from the hospital in an effort to reduce length of stay has had the effect of impeding the trainee's ability to establish professional relationships with patients and families, hindering the development of their crucial skills.
4. Primary care attendings spend much less time in the hospital (because their patients are increasingly ambulatory) resulting in reduced contact with trainees and, hence, in reduced opportunities for role modeling and for teaching primary-care attitudes and skills.

Clearly, the remedy is to shift more of the burden for educating primary care physicians to outpatients sites. Some of the advantages and some of the difficulties in doing so are evident from an examination of the following table which notes many of the differences that exist between the inpatient and outpatient setting with respect to the educational mission:

On balance, the advantages of shifting more of general internal medicine training to the ambulatory setting are obvious, but such a shift will incur considerable cost. Among the cost implications are the following:

1. On inpatient wards, the third-year medical student, the fourth-year student, the intern, and the senior resident can all interact with the same patient and gain educational benefits appropriate to their level of training. The efficiencies inherent in this scheme are not achievable in the outpatient setting. As a rule, only one primary-care trainee can be involved directly in the management of a given ambulatory patient, a cost arrangement.
2. Efficient use of attending time is also maximized in the inpatient set-setting and is significantly attenuated in the ambulatory setting. One teaching attending is generally sufficient to address the educational needs of several residents at each level of training on inpatient services; the ratio of residents to teaching attendings in the ambulatory setting is much lower. Moreover, virtually immediate availability of inpatients for "unscheduled" visits by trainees and attendings contributes further to the efficiency of the learning process, but is a luxury that is unobtainable in the ambulatory clinic.
3. Space constraints pose a serious problem for ambulatory teaching. Most standard examination room, designed to accommodate a patient and one physician, are not of a size sufficient to accommodate the preceptor, the trainee, the patient, a family member, and others, as often required to conduct an ideal teaching exercise. Moreover, the additional time required for teaching, and the fact that relatively inexperienced trainees are less efficient, means that more examination rooms are needed for a given patient load. Most ambulatory settings also do not currently contain adequate conference room space for the teaching missing.

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4. Increasing ambulatory teaching time not only incurs additional costs in the ambulatory setting but does so in the inpatient setting as well. Pressure to reduce residents working hours is already increasing the cost of inpatient care because "cheap" services provided by house staff will, of necessity, be shifted to other providers (e.g., attendings, nurses, allied health personnel). Shifting available resident time more to the outpatient setting will, of course, aggravate this problem.

How would the shift towards ambulatory training effect the attractiveness of internal medicine as a career option for medical students? Evidence that internal medicine is losing its attractiveness is undeniable. Over the last four years, the number of U.S. graduates seeking three-year internal medicine programs has fallen by more than 800. As a result, less than 60 percent of the available positions in three-year internal medicine training programs were filled by US graduates in the 1989 Residency Match. This figure is down from a high of about 77 percent ten years ago. The reasons for this declining interest in internal medicine (a decline paralleled by the experience of Family Medicine and Pediatrics) are multiple and still largely speculative. They almost certainly include higher income expectations in other fields, heavy indebtedness, life style issues, and the positive attractions of the technology and new capabilities of other specialties. Just as certainly, however, many students who might naturally be inclined to careers in general internal medicine are being driven away by the way in which we introduce them to our specialty. The vast majority of medical students are exposed to the practice of internal medicine for the first time during the third-year clerkship, an experience that occurs predominantly and often exclusively on busy inpatient services. As a result, we reveal to the student only a small and often discouraging segment of the internal medicine spectrum. Moreover, those individuals on the medical ward with whom students identify most closely—the interns and residents—are overly stressed, often disgruntled and, because of limited ambulatory experience, unable to communicate the sense of gratification inherent in the traditional, non-hospital portion of internal medicine practice. Unfortunately, it is precisely at this time—in the third-year of medical school—when most students make their final career choice. It is reasonable to assert, therefore, that a shift towards education in the ambulatory setting—motivated by sound didactic considerations—will also have the desirable secondary benefit of enhancing the attractiveness of the field to medical students and of augmenting the nation's dwindling supply of primary care specialists.

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Pertinent Educational Issue	Inpatient Setting	Outpatient Setting
Nature of patients	a) Markedly skewed toward acutely or terminally ill.	a) True reflection of internal medicine's domain; chronic, less intense conditions; spectrum includes pre-hospital, post-hospital and non-hospital care.
	b) Often non-communicative.	b) Generally communicative
	c) Frightened, stressed.	c) Typically relaxed; able to relate.
Duration of relationship	Typically only a few days	Indefinite
Contact between trainee and patient	a) One-of several trainees	a) One-on-one
	b) Highly focused on immediate problem	b) Broadly focused on the whole patient
Resemblance to primary care practice	Scant	Extensive; identical
Use of Community Resources	Nil	Routine
Opportunities to learn health promotion/ disease prevention	Limited	Unlimited
Efficiency for educational purposes	High: Each patient available to several trainees, multiple work-ups.	Low: Each patient available to only one trainee.
Availability of patients for teaching	a) easy to schedule teaching exercises	a) hard to schedule teaching exercises
	b) sustained (24-hr.) interaction over a few days	b) interrupted interaction over months to years
	c) inpatients are "captive"	c) out-patients are immersed in activities of daily life; resist "captivity"

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A final word underscoring the urgency of developing an effective strategy for teaching primary care medicine in the ambulatory setting relates to the Resident Review Committee in Internal Medicine. In the fall of 1988, the RRC-IM put forward a new set of Special Requirements for training in internal medicine which, among other needed reforms, mandates that a minimum of 25 percent of the three-year training program be spent in ambulatory settings. This change was strongly endorsed by the Association of Program Directors in Internal Medicine (APDIM) as well as the American Board of Internal Medicine (ABIM) and the American College of Physicians (ACP). The Accreditation Council on Graduate Medical Education (ACGME) accepted the proposals and agreed to an implementation date of October 1989. Unfortunately, as the logistics and cost implications of complying with this new standard are becoming more widely appreciated, the ACGME is under pressure to back off from, or at least to delay, implementation of this "25 percent rule". Thus, despite universal acknowledgement that more ambulatory training is an educational imperative for the 1990's, the inadequacy of current mechanisms supporting graduate medical education in internal medicine to accommodate this change threatens to prevent it from occurring. We need help.

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CHARACTERISTICS OF PRIMARY CARE OSTEOPATHIC GRADUATE MEDICAL EDUCATION IN THE AMBULATORY SETTING

Fred C. Tinning, Ph.D., President
Kirksville College of Osteopathic Medicine

Overview

Before I speak briefly to you today about two osteopathic primary care graduate medical education programs in the ambulatory setting—one at my college, the Kirksville College of Osteopathic Medicine (KCOM), and the other one at Michigan State University-College of Osteopathic Medicine (MSU-COM)—I would like to give you some background regarding the osteopathic profession and KCOM.

The osteopathic profession has over 23,000 practicing physicians. Just three years ago, we had 200 hospitals; we now have 178. We have over 50 million patient visits per year. A recent study completed by Ron DeGarmo, fourth-year student at KCOM and a research assistant in the office of institutional research and development, found that 58.8 percent of the 1975–1985 KCOM graduates identified primary care as their regular practice.[1]

In northeast Missouri, KCOM serves a catchment area of 23 counties with a population of 350,000. Our sister institution, the University of Missouri-Columbia, is about 90 miles away. In those 23 counties there are seven small hospitals, a rural referral center (which is our teaching hospital), and a mental health facility (which is also ours). We have an 80,000 square foot ambulatory clinic, which has 60,000 patient visits per year, and for 40 years, we have had eight rural clinics which are located in very small communities (populations under 2,000). Forty-four percent of the people are underinsured; 22 percent are totally uninsured. Forty-two percent are 150 percent below the poverty level; 23 percent are over 63 years of age. A significant number of them are in extended care facilities.

Our institution has provided support for the physicians in small communities by having some of our specialists and subspecialists hold clinics in preceptor or health department offices in the local communities. For example, the chairperson of our department of obstetrics and gynecology works with three general practitioners who provide obstetrical care for underserved areas of northeast Missouri. In addition, our students go to Missouri Department of Health clinics and provide clinical services. An intern is always with them, and two clerks go with the physician. Indemnification obviously is a problem, but we are working on that with the state of Missouri.

It seems that in reviewing our osteopathic programs, what goes around comes around. The osteopathic profession is approximately 100 years old. Our bread and

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butter has been family health care, especially in communities of 60,000 or less. Of course, we went to the major cities as the years passed, but up until about 40 years ago, you never heard of a specialist in the osteopathic profession. Then came the advent of training in internal medicine and OB and then in pediatrics. Before that time, our general practice physician did it all wherever he was.

In planning solutions for the problem of an inadequate number of primary health care providers, one must understand the decisions that brought about the present dilemma. In the past decade, osteopathic medical schools moved in part away from their traditional osteopathic clinical education programs, based upon junior/senior year rotating preceptorships, externships, and rotating internships in physicians' offices, hospitals, and ambulatory clinics, to a greater hospital/specialty-based education program. This is the primary reason for the observed decrease in primary care providers. A secondary reason, which was fueled by the first, was the increasing pressure placed upon osteopathic students to receive specialty training because of costs associated with education and the need for greater income in order to practice (e.g., malpractice, technology in office, etc.).

Now we have gone full circle. In an effort to increase the numbers of primary care providers to their former levels, schools of osteopathic medicine are returning to and/or strengthening their traditional ambulatory-based intern and residency education programs MSU-COM's ambulatory-based pediatric residency program and primary care specialty residency training program[2] and KCOM's growth from the rotating senior clerkship and rotating internship to the family medicine residency and internal medicine residency programs being conducted in extended care facilities, rural clinics, the Gutensohn Osteopathic Health and Wellness Clinic, and smaller, rural hospitals[3] are examples of this trend.

The Michigan State University College of Osteopathic Medicine

Model[4]

MSU-COM, under the leadership of their dean, M. S. Magen, D.O., believes it is time for significant change in medical education to address the issues brought about by the societal context of medicine, the university value system, clinical specialization, and the changing face of health care delivery in America. MSU-COM will use the following precepts to guide implementation of ambulatory-based, primary care, postgraduate education programs.

1. Develop an ambulatory-trained, primary care physician with high levels of competence in the areas of general practice, general internal medicine, pediatrics, and obstetrics and gynecology.

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2. Increase exposure of the undergraduate and graduate osteopathic medical students to ambulatory care in a structured environment with no diminution of didactics and with opportunity for exposure to other health care professions.
3. Combine undergraduate exposure to primary care with the first two years of graduate medical education in the same discipline under the control of the medical schools with a hospital(s) and ambulatory clinic(s). The third year of medical school would be coupled with GME1 and GME2.[5] The control would rest with the medical school but would consist of organized hospitals and ambulatory clinics.[6]
4. Include non-medical aspects of practice such as health policy, health economics, geographic distribution, etc., in students' educational exposure.

We have neglected the relationship between medicine and the medical professions and the nation and the public—access to care, physician productivity, managed care, supply of physicians, geographic distribution, and essentials of health policy at both the federal and state levels. Other issues include the ethics of care, the business and economic aspects of practice, relationships to third-party payers, and responsibilities to patients and the profession. We have neglected health and wellness, prevention, and care for the total family by promoting the importance of high-tech medicine.

5. Expose students to the problems of populations within community-based medical education. Coordination with schools of public health and departments of community health/preventive medicine would be of value.

It is time to move to the "community-based medical school" concept to train the students in communities, community hospitals, and ambulatory clinics to develop physicians capable and sensitive to practice primary care at this level.

The Kirksville College of Osteopathic Medicine Model

Historically, undergraduate clinical education at KCOM has been based upon ambulatory experiences involving the school's Gutensohn Osteopathic Health and Wellness Clinic, eight rural clinics located in a 60-mile radius of Kirksville, the Twin Pines extended care facility, and private osteopathic physicians acting as preceptors. Ambulatory clinics can provide the facility for appropriate instructional input of undergraduate students, as well as postgraduate students. To accomplish this, six areas of consideration must be emphasized: 1) program educational objectives, 2) objectives for the ambulatory training centers, 3) types of ambulatory training centers, 4) location of facility, 5) management and supervision, and 6) selection and evaluation.[7]

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Undergraduate education programs conducted in ambulatory settings have been judged successful by graduates of this type of program. Graduates surveyed stated that their education in ambulatory settings provided primary care exposure, opportunity to follow patients over time, and an opportunity to improve doctor/patient relationships.[8] Each of these results coincides with the expected results of postgraduate programs conducted in similar ambulatory settings.

KCOM's success with providing undergraduate clinical education in its rural clinics, extended care facilities, and private physicians' (preceptors) offices during the junior/senior year clinical education clerkships is supported by the research literature which reports positive results. From these well-developed educational programs, the basic foundation is provided upon which to build a viable, postgraduate ambulatory-based education program.

Postgraduate programs at KCOM have been revised to conform with the new AOA postgraduate education regulations adopted in March 1989 and with specialty colleges, such as the American College of Osteopathic Internists (ACOI), that mandate that at least 25 percent of the resident's education time must be in an ambulatory continuity health care setting. Because the model is intact from the undergraduate program, the accessibility for graduate education is made simpler. Both the postgraduate intern year, PGY-1, and the residency years, PGY-2 and PGY-3, etc., are modeled after KCOM's successful undergraduate ambulatory-based rural clinics and private physician preceptor educational program.[9]

The internship year will follow the traditional rotation model with the one-month block of general practice being replaced by weekly experiences in ambulatory primary care settings. Course work that builds skill in doctor/patient relationships, practice management, patient management, and personnel management presented in an ambulatory setting has been made a part of the internship education program.

Primary care resident programs based on ambulatory clinical education experience have been developed in general practice/family medicine and general internal medicine. A three-year grant was awarded to the College by the U. S. Department of Health and Human Services to revise the College's general practice residency program.[10] The general practice residency is an outpatient program in which the resident develops primary care skills in the ambulatory clinics operated by the College and in the offices of private physicians who are performing as preceptors. The private physician preceptor program was developed through a three-year grant from the U. S. Department of Health and Human Services. The grant provided funds to identify and train private physicians to serve as preceptors, and additional funds were provided to develop the instructional processes and curriculum for the preceptors to utilize with the students.[11]

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Program Description of General Practice Residency[12]

This education program develops cognitive skills that are patient-oriented through quality clinical experiences in ambulatory primary care settings. The program is designed to achieve the following goals:

1. Provide training directed toward ambulatory care for all patients, regardless of age or sex. This is a basic responsibility of the general practice physician.
2. Provide training that is programmed for ambulatory care and continuity of care experiences with emphasis on health maintenance and illness prevention.
3. Provide the resident with the psychosocial skills necessary to establish a trusting and therapeutically beneficial relationship with his/her patients.
4. Enhance the ability of the general practice physician to practice comprehensive health care.
5. Produce a residency-trained, general practice physician who is cost effective in patient management, both ambulatory and in-hospital.
6. Increase the number of residency-trained osteopathic general practice/family medicine physicians who may choose to practice in small towns and rural areas, including underserved rural areas.

Summary

It has been pointed out in the literature that a need exists for additional primary care physicians. Many reasons have been identified by the declining numbers of primary care providers over the past two decades. The major solution to this problem most often put forth by those knowledgeable about this subject is to change the primary care postgraduate program from an inpatient model to an ambulatory education model.

So, for us, we have come full cycle, realizing that at one time 90 percent of our physicians were serving in primary care, general practice medicine. In the seventies, the percentage decreased, and only 50 percent were replacing the physicians who were retiring. We are now back to about 58 percent of our physicians who are practicing in the primary care area.

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We have had to ensure in our own institution the replacement of our physicians by providing some unique reimbursement programs for our students. KCOM's tuition is about $15,000 per year. That is very high. Thus, we developed the Institute of Rural Health, which was made possible through an endowment of approximately $2 million from benefactors of the College. From the earnings, we provide our third- and fourth-year students the opportunity to have their tuition reimbursed if they agree to practice in a rural area as a primary care physician for a predetermined number of years.

In summary, the residency ambulatory programs presented herein address the problems and the changing paradigm of American medical practice. To reach a resolution for these problems, the combined resources of osteopathic hospitals, ambulatory clinics, and the colleges of osteopathic medicine have been marshalled to develop and operate a residency program that will:

1. Attract an increased number of osteopathic graduates interested in broad-based, primary care medicine;
2. Prepare residents to practice competently well into the next century;
3. Provide a continuum of education from the undergraduate to the graduate level and an opportunity for continuing osteopathic medical education;
4. Raise the quality of trainees by incorporating contemporary scholars and study groups' recommendations for strengthening primary care residency training; and
5. Increase the breadth and variety of learning experiences through shared faculty and resources of several osteopathic and allopathic medical disciplines.

Note: The full report is available through the President's Office at the Kirksville College of Osteopathic Medicine, 800 West Jefferson, Kirksville, MO 63501.

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Discussion

Responding to the concern expressed about the level of interest in careers in primary care specialties, discussants considered the extent to which different factors influence physician career choice. Noting that data suggest that experiences during the clerkship have relatively little influence on specialty choice, and that data collected by the Association of American Medical Colleges indicate that the amount of debt accrued by the end of medical school does not appear to be a determinant of specialty choice, discussants suggested that other factors are important. Namely, the sense that cost containment pressures and an emphasis on the efficacy of care are changing primary care practice styles; and that income and prestige is lower in primary care than in most specialties. A related matter was raised: is the quality of entrants into primary care specialties declining, and are top medical school graduates choosing primary care specialties less frequently? While participants expressed a belief that some deterioration in the quality of entrants has occurred, no hard evidence exists. An attempt to examine changes in the quality of entrants into various specialties might provide assistance to policy-makers concerned with the specialty distribution of physicians.

The question of the quality of patient care and the quality of training in ambulatory residencies was also addressed. At issue is whether the patient population of continuity clinics, particularly in urban areas, is sufficiently representative of the general population to provide an adequate training experience; whether practitioners and faculty, who have not been specially prepared to teach in ambulatory settings, can provide an adequate quality of teaching; and whether low-income patients who attend continuity clinics are well served by being cared for by residents. It was suggested that there is an absence of knowledge about how best to provide ambulatory primary care for low-income populations, and that faculty development funds are needed to upgrade the teaching of ambulatory care.

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COST AND REVENUES FOR GRADUATE MEDICAL EDUCATION

Ruth Hanft, Ph.D.
Research Professor and Health Policy Consultant
Department of Health Administration
George Washington University
(This paper summarizes the paper that can be found in Appendix B)

Introduction

The financing of graduate medical education is complex and evolved pragmatically with the historic development of teaching hospitals and patient care financing. For almost all of this century, medical and graduate medical education clinical instruction has been concentrated in the hospital setting. Graduate and undergraduate medical education and financing are intertwined because of the jointness of clinical activities of faculty/residents and M.D. student.

While there are data on the sources of revenue that support medical schools and their faculty, and sources of data on support of hospitals, there are no comprehensive data on the funding streams for medical and graduate medical education that: allow disaggregation by discipline/specialty; separate the funds flow between undergraduate and graduate medical education; and separate inpatient and ambulatory care financing. Many of the funding sources are fungible and their specific use is departmental or hospital specific.

History of Support

Until the development of a variety of federal programs that indirectly and directly support medical education, didactic and clinical undergraduate medical education was supported similarly to other higher education through state appropriations for public institutions, tuition and endowments. Prior to World War II, medical schools relied on a small full-time faculty, mainly in the basic sciences, and a "volunteer" or geographic full-time clinical faculty which received no compensation or modest stipends from the school and/or hospital with the quid pro quo being the prestige of the affiliation with a medical school and/or teaching hospital and admission privileges for private patients at a teaching hospital. Residents and interns were provided with meals, housing and sometimes small stipends.

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World War II marked a turning point in medical education with substantial federal investment in biomedical research funding, developing after the war. This funding became a major source of indirect support for medical schools and their faculties. The National Institutes of Health and other grants awarded for the conduct of research and research training include funds for salaries of faculty who conduct research and also spent time in teaching. These funds enabled the schools to expand the numbers of full-time faculty. By 1955, one third of medical school revenues were derived from research grants and contracts.

Direct federal support for education did not emerge until the 1960s. Federal direct support for schools and undergraduate medical education began in 1963. This support was relatively brief.

Patient care funding began to increase with the growth of private health insurance in two ways. Hospitals incorporated education costs into their charges, and for a growing number of middle class patients insurance covered physicians' fees. Today support for graduate and undergraduate medical education comes from a multiplicity of sources. These sources for graduate medical education include:

- State appropriations to schools and their hospitals
- Federal support of VA and military hospital residencies
- Private and public third-party payments, including Medicare, to hospitals and fees to teaching physicians.
- Indirect faculty and fellow support from research.

Patient Care Support

Patient care activities are an integral part of the educational process. The support of GME takes two forms: (1) direct support from hospitals for salaries, fringes and other direct costs of residents and supervisory teaching physicians, and (2) fee support for patient care services to individuals covered by public or private insurance. Fees are billed by faculty for services rendered. Medicare also adds an indirect education adjustment designed for multiple purposes in addition to education. Faculty have organized "practice plans" for collection and disbursement of the fees. This source of income has grown rapidly since the early 1970s. The amount of revenue generated from faculty practice plans varies widely among institutions, depending on many factors, including the payment sources for patients' care, and the structure of the practice plans. The plans now account for more than 19.4 percent of the gross revenue of public schools and almost 22.5 percent of

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private schools' revenue. Hospital payments to medical schools in addition, amount to 7.8 percent and 21.2 percent respectively, mainly for payment of the teaching physicians.

With the increased flow of third party payments for graduate medical education in the 1970s, issues relating to both geographic location and types of specialty training began to arise, as well as issues of the "fairness" of financing. Specifically, for the purpose of this discussion, reimbursement from third-party payors for inpatient services has financed a greater proportion of the costs and charges than for outpatient services.

Role of the States

The states have played a major role in support of undergraduate and graduate medical education and have been primarily responsible for the expansion of the number of medical schools and for increased enrollment, as well as for the support of primary care residencies.

The states vary widely in how they support graduate medical education, their teaching hospitals, and the degree of control they maintain over the number of residency positions in their own state university hospitals which are a major training base for residents. State university hospitals provide approximately 15 percent of all of the graduate medical education positions.

Primary Care Residencies and Ambulatory Care Training

Historically, support of graduate medical education has come from hospital financing. Traditionally, hospitals incorporated education costs in their cost base and these costs were recognized during the implementation of Medicare. The federal government made an early decision to pay the direct costs of residents, supervising faculty and other direct costs associated with graduate medical education as part of Medicare Part A. Blue Cross cost based plans also recognized these costs and hospitals incorporated these costs in charges to charge payors.

The evolution of the family medicine residency and the development of the community based medical schools in the 1960s and 1970s stimulated the initial interest in a change in focus of residencies from the traditional large teaching hospital to community based hospitals and ambulatory care settings. The advent of competition in the late 1970s and prospective payment, stimulated changes in the nature of the hospital and the delivery of health care services and has led to increased pressures to expand education sites to ambulatory care settings. While

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most pronounced in the primary care specialties, ambulatory care training is an increasing need in specialties like ophthalmology, radiology, and general surgery.

The financing of graduate medical education however, has not changed accordingly, except for the recent Medicare change which recognizes the direct cost the hospitals pays when the resident is in an outpatient setting, including outpatient settings outside the hospital if the hospital is willing to support these costs. There are no national data on financing of graduate medical education in ambulatory care settings.

Family medicine residencies are structured differently than other residencies. In general, the first year of education is based in a hospital with the financing from the hospital. In subsequent years the education takes place in an ambulatory care group setting with support from grants and fees for service generated by faculty and residents. Residents who are licensed can have their services billed for in these settings, although not in the hospital setting. On average, about 30 percent of the revenues come from fees from patient care.

There are several generic problems in financing primary care residencies outside of the hospital setting. The problems are summarized as follows:

— In the hospital setting the resident and supervisory physician are paid salaries from hospital revenues with education costs separately recognized by Medicare and Medicaid and historically included in hospital charges. If a personal and identifiable service is provided by the teaching physician, a fee can be charged to the patient or insurer.
— In the outpatient setting not linked to a hospital (for Medicare) and for private third-party payment in outpatient settings, the resident's salary and a supervisory salary for the faculty must be generated from fees to the patient/third-party or from grants from government and/or philanthropy. In the primary care specialties, the fee levels are substantially lower than for procedure oriented specialties. While there are two sources of patient care support for hospital based or hospital outpatient linked training there is only one in the non-hospital ambulatory care setting. In addition, there is no Medicare indirect education adjustment in the outpatient setting.
— The development of faculty practice plans has been on a departmental/specialty basis with the procedural specialties able to generate substantially higher revenues than primary care specialties, because of the Medicare and private insurance charge structure. The revenues of these plan flow to the department with some small percentage flowing to the institution. The organization of medical schools on a departmental basis and graduate medical education on a specialty/program basis combined with the departmental flow of hospital and practice

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plan revenues leave the medical school as an institution with a paucity of flexible funds.

Institutions that do not receive public appropriations, have little ability to cross subsidize and specific specialties retain the majority of their practice earnings for departmental and even division rather than institution wide goals.

Supporting education through charge based reimbursement to physicians is feasible. There are, however, both institutional and structural constraints that limit the viability of relying on charge payments to fully support ambulatory based programs summarized as followed:

- The charge and reimbursement structure that rewards procedural activities at much higher rates than cognitive services.
- Potential reduced productivity in ambulatory care education and higher costs, in contrast to hospital based education.
- The volume of no pay or low pay patients and Medicaid patients.

Who Should Support GME?

The question of who benefits and who should pay for graduate medical education has been a subject of debate for many years.

From the studies that have been conducted, patients are major beneficiaries of house officer activities. Residents spend the majority of their time providing patient care services, with and without supervision. A large proportion of training takes place in public and large teaching hospitals and their outpatient departments that provide care for the indigent. Residents have traditionally provided, and continue to provide, indigent care. In some states, the family practice residency clinics are major providers of care to Medicaid and uninsured patients.

Medical schools also benefit from the teaching activities of house staff. The activity analysis studies show a significant teaching contribution by the residents to the education of medical students. Yet no payment is made by the schools to the teaching sites for these activities.

Faculty also benefit significantly. The resident provides an "extra" hand and coverage for the teaching physicians, as well as contributing substantially to the services that the teaching physician bills for. These fees flow to the medical school department and faculty in addition to the hospital payment for supervision by faculty.

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Hospital benefits accrue from the availability of round-the-clock physician staffing by residents at a lower cost than if provided by community physicians. Teaching programs are also regarded as a qualitative asset for hospitals.

The residents also benefit, receiving the advanced training that provides the skills to practice a high earning profession.

There are multiple beneficiaries. However, current practice places the majority of financing burden on patient care funds.

A case could be made for multiple sources of financing from the multiple beneficiaries if there could be quantification of the benefits that accrue to each. These sources of financing could include:

- Tuition paid by the resident for education
- Salary support from health professions schools to account for teaching activities of the resident.
- Salary support from the hospital for standby/coverage of services.
- Fees or salary support from patients/third-parties for the provision of services.
- Salary support or fee sharing from faculty

Moving to increased fee support for primary care training in the outpatient setting raises the following problems, and probably is not feasible unless the financing of practice plans on a departmental basis is changed to institution wide plans.

The barriers to increased fee based support in summary include:

- Incentives to support residencies in the high fee/high earning specialties and inability of the primary care specialties to generate sufficient funds to cover education costs.
- The concentration of GME in settings with a large number of indigent, both Medicaid and uncompensated care, patients.
- Increased regressivity of financing.

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Large amounts of dollars, not including faculty fees, estimated at $8–$10 billion ($4 billion of Medicare funds), flow for the support of graduate medical education. The issue is not the amount of revenues but the distribution of the revenues in support of graduate medical education priorities.

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THE COST OF GRADUATE MEDICAL EDUCATION IN OUTPATIENT SETTINGS

Judith R. Lave, Ph.D.
Professor of Health Economics
University of Pittsburgh

(This presentation summarizes the paper that can be found in Appendix B)

In considering the cost of training programs in the ambulatory sector, the appropriate question to be raised is: what additional resources are needed to accomplish this task or what is the increased monetary cost of adding this activity? These questions are different from an equally important one: will the implementation of this program generate net positive revenues? To the sponsoring institution or administrator of the training program, the impact on net revenues may be the more important question.

The cost of the training program will depend on its nature. Training programs can range from the development of a residency program in family practice in a non-hospital setting, the introduction of an ambulatory based primary care component in an internal medicine residency program, or the implementation of a clerkship for medical students in an HMO or family practitioner's office for 4 weeks during the summer. Since the programs differ, so too will their costs.

The question that has attracted the most attention in the literature is the following: is it more costly to provide medical care in ambulatory settings in which residents are both being trained and are providing services than it is to provide such care by fully trained physicians? If costs are higher, the "net costs" of training will be positive; if lower, then the net costs of training will be lower. I consider this issue here in some depth.

In the ambulatory setting, as in all settings, residents acquire skills while "learning by doing". However, while they are practicing, they receive faculty input through direct supervision, case conferences, chart review and consultations. The nonphysician cost component may be higher when residents provide care because they may order more tests, require more nursing time per visit or use examining rooms less efficiently than experienced physicians. In addition, to accommodate the training activity, the space configuration may be different and more expensive than when only experienced physicians practice.

To focus attention on the most important factors determining the net costs of training, assume that only physician services are needed to produce patient visits. Figures One and Two are used to motivate the discussion. Figure One indicates that a Fully Trained (FT) physician provides OJ visits per unit time, while the number of visits provided by a resident varies with the year of training

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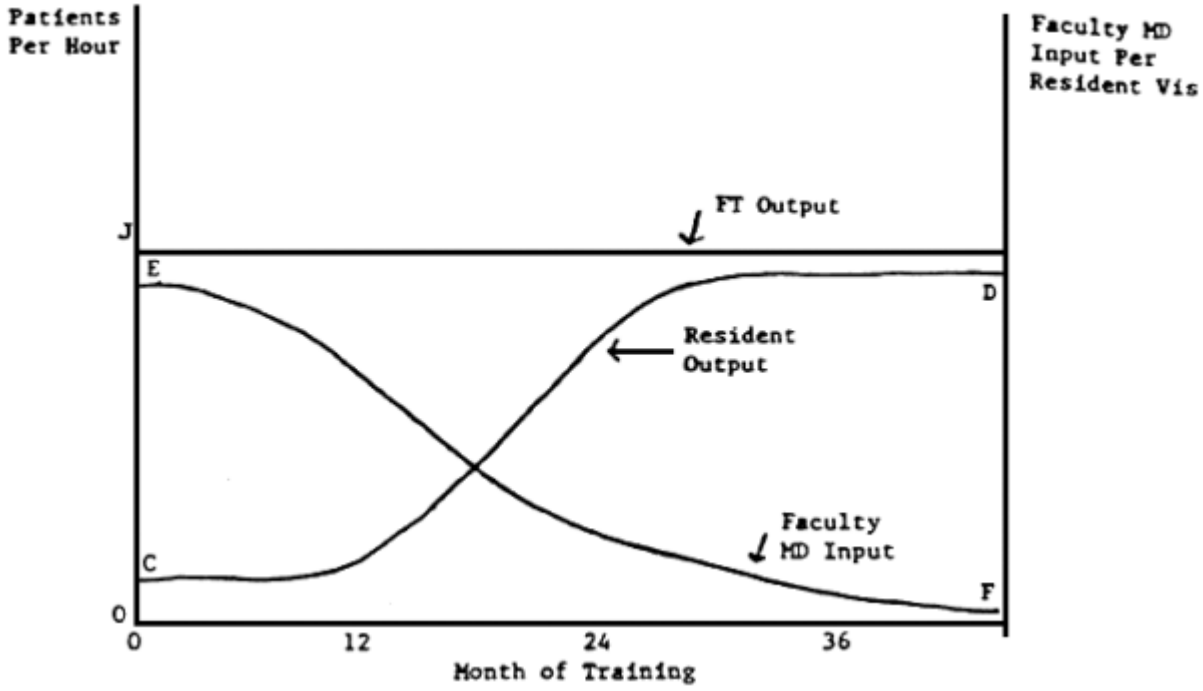

Figure One

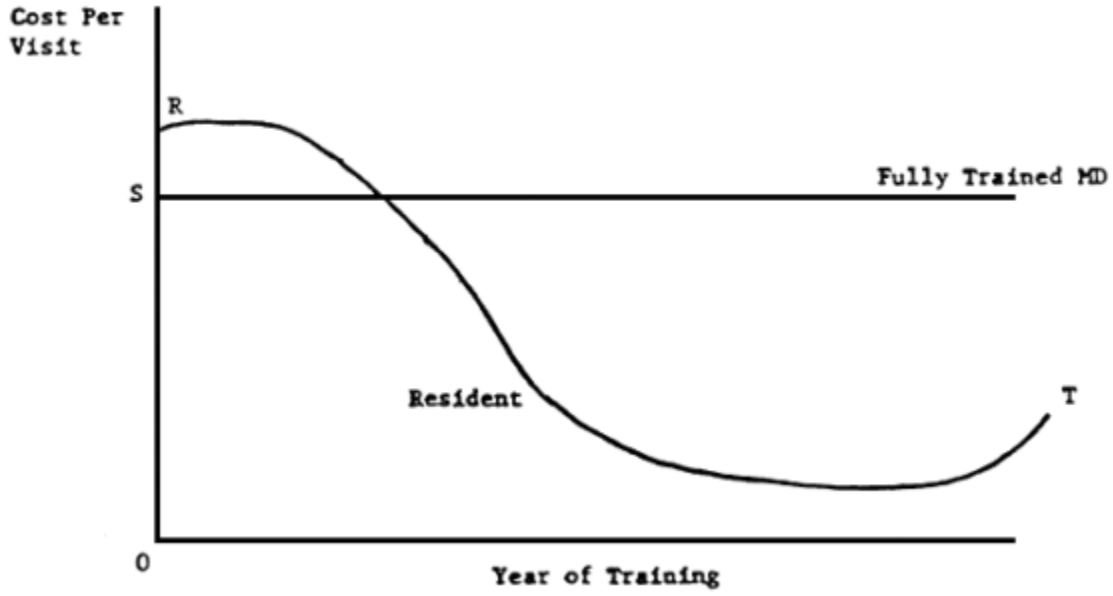

Figure Two

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as indicated by the curve CD. The amount of faculty input needed per average visit provided by a resident decreases as residents become more experienced as shown by EF. In Figure 2, OS indicates the average cost of a visit provided by a FT physician. RT indicates the average cost of a visit provided by a resident. At first the cost per visit provided by the resident is higher than that provided by a FT physician, however, as faculty input decreases and resident productivity increases with the level of training, the cost per resident visit approaches that of a FT physician's and then falls below it. The curve RT increases towards the end of the training period because resident salaries increase while the number of hours worked decrease, leading to an increase in the cost per hour.

Although the general shapes of Figures One and Two should hold in all settings, the details will vary from site to site. For example, the position of CD in Figure One will depend upon the flow of patients through the clinic, the efficiency with which the practice is operated and the pace at which residents practice. The position of EF will vary with the amount of training and feedback the residents actually receive. Finally the relative positions of OS and RT will depend upon the hourly cost of residents and the faculty. Thus, the net cost of training will depend upon the amount of faculty input into the training process, the relative income of the faculty residents and the flow of patient visits. It will also depend upon the mix of residents.

There are four different approaches to estimating the net cost of graduate medical education in the ambulatory sector: time and motion studies, replacement cost studies, before and after studies and relative cost studies. In time and motion, the investigators directly observe how physicians spend their time. Although these studies sometimes have methodological problems (particularly when physicians are doing a number of tasks simultaneously), they provide much useful information. For example, in a recent study of 15 practices, Kossecoff and associates found that for follow up visits when the second year resident was the primary provider, the attendings spent less than a minute with the patient in 9 practices, between 1 and 6 minutes in 4, and over 6 minutes in 2 of them. In replacement cost studies, the following question is asked: if outpatient clinics continued to serve the same number and mix of patients, what would be the cost of closing the teaching programs and using full time practicing physicians to provide the services that were previously provided by the residents? In before and after studies, analysts examine the effect of introducing residents and medical students into practice settings by estimating the level of costs and output at both points of time. In comparative cost studies, analysts compare the costs of care across settings which have different levels of involvement in graduate medical education.

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Since most of these studies are based on single sites, they often come to greatly different conclusions. For example, two replacement costs studies have just been published. Both studies used comparable methods of analysis - yet they reached diametrically opposite conclusions because their estimated hourly costs for residents and fully trained physicians were quite different. However, there is some consistency in the findings and the following conclusions can be reached:

1. The introduction of medical students into the ambulatory practice setting leads to an increase in patient care costs while second and third year residents lead to a decrease in patient care costs.
2. The nonphysician inputs are higher in those settings in which training is taking place. Controlling for case mix, residents order more tests than fully trained physicians.
3. The amount of "teaching" provided by attending physicians varies widely across programs and sites.
4. In the ambulatory sector, most of the training is done by faculty physicians. This is quite different from the practice that prevails in the inpatient setting where the interns teach the medical students and the senior residents teach the junior residents. Some of the difference is due to the fact that the patient is only in the setting for a brief period of time.

The above discussion addressed a narrow question: will the cost of adding residents to the ambulatory clinical setting lead to an increase in the costs of patient care provided in that setting. There are other important questions. One such question is: what is the effect of a training program on primary care on the financial status of the overall institutions. To address this question we need to look at a broader range of costs and revenues.

The costs of a training program are the additional costs which are incurred as a result of the program. In this case, the costs of the program can be classified into three groups: the costs of providing the services which are generated in the clinical setting in which the training in primary care is taking place, the administrative costs of running the training program and the costs which are incurred when the primary care residents rotate through the other services. The revenues from the program include practice revenues, other program revenues (such as government grants) and other hospital revenues such as the Medicare payments for the cost of direct education and revenues associated with increased outpatient testing and hospital admissions associated with the ambulatory programs.

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No study has ever studied the full range of costs and revenues. Most studies examine whether clinic revenues cover clinic costs (including the prorated resident and faculty costs), or whether clinic revenues cover the full costs of the training program as seen from the perspective of the training program rather than the perspective of the sponsoring institution.

The general findings are that in most cases clinic revenues do cover the costs of operating the clinics (if only the prorated cost of the faculty and residents is included in the cost of the clinic) but that they do not cover the full cost of the training programs. Some studies find that the clinics are not operated very efficiently and that occasionally there is a "shortage" of patients. Many analysts, particularly those who have studied family practice clinics, believe that it should be possible to increase clinic revenues by increasing the volume of patients without jeopardizing either the quality of patient care or the quality of the training. However, most do not believe that it would be possible to raise revenues by increasing fees both because of the limited insurance coverage for ambulatory services and increased competition with the community physicians.

Before concluding, there is a final cost issue that should be addressed; and that is what are the costs of reallocating residents time from the inpatient to the ambulatory setting. There are no published studies as yet which have examined this issue.

In concluding, I would like to return to the training process per se. Training in the ambulatory setting is probably more costly than it is in the inpatient setting. As noted above, not only is more training done by attendings rather than residents, but also there appears to be a higher attending/resident ratio. In the studies that were examined, there was considerable variation in the amount of faculty time that was provided to the resident in the clinic setting. Since faculty time is very expensive, research on the training process per se would seem to be called for.

Discussion

Robert Derzon, Vice President, Lewin/ICF Inc, was the discussant for the presentations by Ruth Hanft and Judith Lave. Discussion noted that available evidence indicates that there are both net and gross costs to residency training in primary care ambulatory settings. It was emphasized that there are important limitations to all the studies on which this conclusion is based. In particular, the variability among training sites (HMOs, model family practices, hospital based clinics, etc.), variability in inputs such as faculty time, variability in the organization of teaching, variability in the insurance status of patients, and the large differences in support of state and private schools, make it difficult to come

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to firm, generalizable conclusions about costs. Because of this variability it is unrealistic to expect to find a single solution to financing problems.

An important factor in determining costs and revenues is the efficiency with which the residency medical practice is run. Because there is a dearth of knowledge about how to run an efficient teaching clinic, and faculty reward systems do not encourage individuals to devote time and resources to developing managerial skills, there is a need for incentives that will draw attention to improving the efficiency of training sites.

There are a number of areas for which the information base is inadequate for policy-making, or in which further study would help primary care residency programs establish effective ambulatory training sites. Questions to be answered include:

- Where is outpatient training conducted today? What are the characteristics of the settings, the patients, and the sources of payment?
- In what settings and geographical locations does the health care system depend on residents to provide access to care?
- In what settings would it be best to extend outpatient training? This question encompasses considerations of the quality of the training, the financial support available, and the extent to which residents add important services to the local care health system.
- What are the replacement costs that a hospital will incur if the inpatient service time of residents is reduced?

Developing some possible solutions to the financing problems of primary care ambulatory residencies, note was made of the differential in faculty practice plan income between the primary care specialties and some of the more highly paid areas of medicine. While this differential suggests that some redistribution of faculty practice plan income from the higher paid groups to the less well paid groups could alleviate financing problems, this would be difficult to implement. If this redistribution were made, there would be a risk of driving the high earners out of academe. Another approach would allocate money to ambulatory settings by funding residents through a voucher system, thereby ensuring that a portion of house staff financing would move to the outpatient setting with the resident.

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LESSONS FROM THE EXPERIENCES OF PROGRAM DIRECTORS

Larry A. Green M.D.
Woodward-Chisholm Chairman of Family Medicine
University of Colorado Health Sciences Center

Introduction

When I was seeking graduate training to be a family physician, the number of family medicine residencies in the United States was increasing from 21 to 46. Since then the number of family medicine residencies has plateaued short of 400 and I have had the opportunity to be a family medicine resident in a University-related residency with a home base in a community hospital and practice in an underserved area where there was a family medicine residency in the local AHEC (area health education center). I also have had the opportunity to direct a university-based family medicine residency, direct a community-based family medicine residency with no university affiliation, and chair a university department of family medicine with its own and six affiliated family medicine residencies. These experiences provide the principle basis for my current views about graduate education in primary care. In the last three months I invited the leadership of Colorado's family medicine residencies to share with me their views of graduate medical education, I unsystematically discussed current affairs with various faculty members at the American Academy of Family Physician's 1989 Residency Advisory Program Workshop in Kansas City, and then I identified four "lessons" to present here today. After a description of each of them, including a few examples, I will end with two simple, perhaps self-evident, conclusions.

Lesson One

The Clinical Phenomena Of Primary Care Are Important, They Differ From Hospital Phenomena And They Have Intrinsic Value.

This is not news. The ecology of our medical care has been elucidated for some 30 years quantifying the larger burden of suffering that never arrives at hospital or consultant's office.[1] The articulation of the nature of primary care has made clear the important differences between ambulatory care and primary care.[2] Clinical practice and experience with teaching primary care have established the great importance of social sciences in primary care. Yet, we persist with the mistranslation of knowledge from health science centers into primary care practice, trap our residents in hospitals where the patients are not, simply relocate hospital services to ambulatory treatment centers and misname it primary care, and find social services and behavioral sciences expendable to primary care

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training programs. There is a well recognized academic disdain captured in many quarters by the phrase, "go down to the clinic." In fact, "the clinic" is the challenging interface between medicine and the rest of the world, a place where people who should come to know each other negotiate the identification and response to various ills, a place where prognosis may be more important than diagnosis — a place about which we are dangerously ignorant. For example:

1. We live in an infertility epidemic. Pelvic inflammatory disease (PID) appears to be a major contributor to female infertility. Early detection and aggressive treatment of PID seems to preserve fertility and reduce morbidity. Yet we now know that even though at least 43 percent of women thought to have PID seen in a primary care research network met current recommendations for hospitalization, only 9 percent were admitted.[3] We also know from the National Ambulatory Medicare Care Survey that randomly selected physicians working in their offices only admit 5 percent to 7 percent of the patients they diagnose with PID.[4] Is this neglect or prudent management? Is this misdiagnosis or a different way of clinical thinking?
2. Miscarriage occurs much more frequently than previously realized, partly because of "the tip of the iceberg" selections biases of our teaching centers.[5] We doctors emphasize in our papers, texts and teaching, the hemodynamic and infectious complications. Our texts advise prompt operative intervention. Yet, primary care clinicians notice that miscarriage as they see it has great psychological morbidity, infrequent hemodynamic and infectious morbidity, and is subject to discriminating non-operative management.[6]

The first lesson from those who aspire to teach doctors to do primary care is that the clinical phenomena of primary care are important, they differ from hospital phenomena, and they have intrinsic importance in and of themselves.

Lesson Two

The Strategies For Teaching In The Primary Care Setting Must Adapt To The Nature Of Primary Care, Specifically The Service Of Free-Living People.

In primary care, patients can and should come and go as they please, making choices they judge to be in their own best interests. Patient preferences, convenience, and effective time management are high priorities, and when addressed, contribute to satisfied, loyal patients who in turn present the precious opportunities available only in continuing relationships, e.g. sustained prevention strategies based on behavior change and uninterrupted treatment plans for chronic disease. However, when appointments are not available, not kept, too long or too short, delayed to maintain continuity with a resident — frustrations can emerge.

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The critical phenomena, episodes of illness, play themselves out over hours, days and years with teachable moments appearing from time-to-time, at various places. The patients' stories evolve with chapters that the residents will probably miss entirely, since only a small fraction of their training time is spent with their own patients in the primary care setting. One program director wrote: "An inefficient inpatient setting will still provide set teaching time. In fact, it may provide easily maintained teaching time since direct patient care needs do not have to be met immediately in an inefficient system. This is very much the opposite to the primary care setting where there is a brief period of time for teaching."

Somewhat paradoxically the healthier patients require immediate attention. This, of course, is a principle explanation for why primary care education requires different strategies and why it is expensive. The doctor, the patient, and the illness converge for a brief visit, perhaps in a small room; and the process of learning must accompany the resolution of the patient's problem, preferably now. We have begun to learn about the special requirements of teaching in the primary care setting; we have much more to learn.

Lesson Three

The Relationship Between Primary Care Residencies and Their Sponsoring Hospitals is a Strained and Tentative Relationship.

There are fantasies that good primary care is easy and cheap and that primary care education can be a free by-product. On one hand, the primary care residency's practice represents a revenue-generating cost center, a source of downstream revenues from its own admissions and referrals to medical staff physicians, a solution to indigent care problems, and a steady stream of new medical staff members. On the other hand, the same residency practice represents a major source of uncompensated care, a cost center that always exceeds its accounted revenues, a supplier of physicians for the competition, and subsidized competition that offends other medical staff members — especially other primary care physicians. One hospital CEO responded, "Since we depend very heavily upon the participation of the private practitioners in the education of the residents, it would be self-defeating to pursue ambulatory care growth beyond that which is necessary for the purpose of the program."

Yet we know in Colorado that throughout the 1980's it consistently has cost us $70,000 to $80,000 per year, per resident to provide family medicine training as we now understand it.[7] About one-third of this amount was spent on resident stipends, one-third on the cost of the primary care practice site, and one-third on

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Having breakfast last month with a group of family medicine residency directors from both coasts, I asked what advice they would offer a program director concerning their sponsoring hospital and in the next 30 seconds the comments ricocheted from — "Never trust a hospital administrator", to "Never believe the numbers they give you", to "Never forget you are making money for them". These comments were not personal attacks but a candid reflection of conflicts between primary care residencies and their associated hospitals.

Perverse incentives abound in the current arrangements. For example, the patient's need may be well-addressed by management in the office without any hospital-based ancillary services, but the hospital's reimbursement may entice referral; and the hospital's budget, and thus, the residency's budget, may best be served by treatment in the emergency room, ambulatory surgery suite, or radiology unit. The resident's educational needs may best be met at the state health department, the occupational medicine health station, the consultant's office, or with the resident's very own patients. The hospital, however, needs in-house, 24 per day hour coverage, particularly for its intensive care units where the primary care residency's graduates will soon find themselves perhaps unwelcomed.

The chief executives of our sponsoring hospitals write: "With the bottom line shrinking in all hospitals, the limited funds are going to be sought after by everyone in many community hospitals. (Our) patient care priorities will win out over education. This may be true even with the academic center."

"While trustee boards are supportive of the quality that a residency brings to an institution, revenue margins of only 1 percent to 2 percent cannot sustain an institution over a five year period...Direct funding of teaching programs, especially those that favor ambulatory care over inpatient care by state or federal agencies is clearly essential if our country is to replenish its primary physician contingent". The relationship between primary care residencies and their sponsoring hospitals is not a particularly health relationship. What is good for one may not be good for the other.

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Lesson Four

Data Management is Essential in Primary Care Training, not a Luxury.

There has been progress with primary care taxonomy, and there are now reasonable classifications for use in primary care. There are information systems that can manage both clinical and business data. These new information tools provide unprecedented opportunities to define what is going on in primary care and contribute to medicine's "tree of knowledge", yielding a more complete picture of human suffering. The same systems can contribute to the monitoring and evaluation strategies essential to assuring residents of an appropriate educational experience. They can help to define episodes of illness, track patients over time, remind doctors to respond, warn doctors of danger, link the patient and the doctor to help that is needed, audit performance of a practice, provide fiscal accountability, define subsets of patients needing special attention, and more. In short, the primary care environment is an unusually complex environment, and effective information management is not peripheral but central to effective patient care, teaching, and relevant research.

The fourth lesson is that the costs of information management are a legitimate part of the cost of primary care education.

Conclusion

The simple, self-evident conclusions are that it is important to fund primary care education and it is important to fund it directly. In the first instance, it is important to fund primary care education because it is of such great value to people, focusing on improving the services rendered in behalf of the greatest portion of the burden of suffering. It is not a free by-product of the better-established medical enterprises. In the second instance, it is important to directly fund primary care education because it announces and establishes the intrinsic value of primary care to our society, relieves conflicting and counter productive incentives inherent in current financial arrangements, and assures the investment is actually made in primary care education. Furthermore, it can stimulate the fuller development of primary care with improved accountability and create incentives for the primary care disciplines to respond directly to public requirements.

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LESSONS FROM A PEDIATRIC PROGRAM DIRECTOR

Joel J. Alpert, M.D.
Professor and Chairman
Department of Pediatrics
Boston University School of Medicine
Director of Pediatrics, Boston City Hospital

The pediatric residency at Boston City Hospital and Boston University School of Medicine stresses primary care pediatrics. The program emphasizes continuity in training experience, has developed a psychosocial curriculum, includes the practice of preventive pediatrics and provides pediatric residents with the opportunity to care for inner city children at risk. Training occurs in ambulatory and out-of-hospital care settings, and a special program strength has been the use of neighborhood health centers in the Boston community as teaching sites. Continuity teaching also occurs in the hospital's primary care and adolescent centers. We have followed graduates' career choices over a ten-year period. Almost 80% have chosen primary care careers with many practicing in inner city settings, and the vast majority have demonstrated, at least to date, impressive career stability.

What issues have emerged in our program? I will comment briefly on our commitment, funding, recruitment of residents, teaching space, changing patient needs and scholarship.

We made a major departmental commitment and our educational goals have matched our service responsibilities. Our faculty has been recruited because of broadly-based interests in general pediatrics. There has been significant involvement of the department chairman in the program, and this has contributed to our reputation as a primary care program.

Funding is a second major issue. Our health centers require extramural funding, especially since training in these settings and the hospital represents increased costs, including faculty for whom either no or inadequate reimbursements exist. We have remained dependent on targeted support such as that provided by Title VII, and pursue other funding sources such as linking our teaching with programs for schools, the homeless and AIDS.

Curriculum has been an issue. While we have developed a comprehensive curriculum which addresses the current morbidity affecting children, emphasizing high-prevalence psychosocial events, we must meet the essentials of the Pediatric Residency Review Committee (RRC). The RRC has mandated changes in pediatric subspecialty training requiring rotations largely in sub-boards of the American Board of Pediatrics. We modified our program to meet these requirements despite

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the fact that our judgment was that a different set of specialties might better meet future needs. In the most recent revisions of the pediatric essentials by the RRC, some increased emphasis has been put upon continuity of care, but the essentials still reflect the tensions within pediatrics regarding the role of a pediatrician as a generalist or as a consultant.

As of this year, we are sending approximately 40% of our residents to neighborhood health center sites. We should be sending 100%. We have sought to expand the neighborhood health center teaching experience for our residents because it gives them direct community experience that is lacking in usual medical-center based activities. But we need to strengthen faculty coordination in teaching by bringing the faculty together as a group. This is not easy. Moreover, with the increased emphasis on shorter work weeks for residents (80 hours specifically and 24 hour shifts), we see difficulty in maintaining, let alone enlarging, continuity time. Ambulatory and continuity time may be cut back, especially if shifts are rigidly enforced. Previously, I mentioned our reliance on Title VII. One of the Title VII requirements is that residents have continuity in sites which meet specific grant criteria. In pediatrics, there are some 40 potential sites outside of the hospital (including courts, schools, day care centers, prisons, shelters, migrant vans, neighborhood health centers, physicians' offices), all of which are important in the experience of pediatric residents in training, but do not meet the strict federal criteria. Just as there is not enough time to educate for all of the specialties, so there is not enough time to have experience in all of these settings, particularly if one is locked into an arbitrary definition of a primary care site.

Recruiting minorities has been an important part of our program, and we are having difficulty despite a special program which the Boston City Hospital House Officers Association, with funds from the Department of Health and Hospitals, has implemented, offering a subsidized elective program for senior medical students. We have been completely up front in ranking minority applicants as high as possible to insure their successful match at Boston City Hospital. We have achieved through the last decade anywhere between 11% and 24% but have found in the last few years that it is harder to have minority men and women match in pediatrics at Boston City Hospital.

Nationally, the number of U.S. seniors entering pediatrics has decreased now to about 61% and many programs did not match (and of those that did an increasing number filled with other than US seniors). Programs specifically identified as primary care did even worse (about 50%). I cannot tell you whether pediatrics fell short because of increased student debts, because of AIDS, because of competition with other disciplines, or because of decreasing interest in primary care, but recruitment is a very real issue for pediatric programs. Students say, "Yes, you're great at primary care, but how do you teach the subspecialties?" That

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attitude is a symptom of the movement away from primary care which has been fostered by the emphasis on tertiary care in medical school clerkships.

Adequate teaching space has been another issue. It is not easy in the ambulatory environment directed toward service to find the space that we require for conferencing and lecturing, especially in the out-of-hospital settings. Identifying a special teaching day, clinic or time helps, but we must remember that this causes disruptions since continuity for the resident and program is in fact discontinuity for the service site when a special teaching day is set aside.

Changing patient need is also an issue. The increase in acuity of illness, particularly around children with AIDS and the relationship to drug abuse has placed another burden on the teaching of general pediatrics. We are attempting to include HIV-positive patients in the panels of pediatric residents and present a curriculum so that they may gain an understanding of the generalist's role in caring for this disease with its devastating impact on inner-city families.

Our program has an active research component, and our scholarship has been successful as measured by the publications and research programs supported by federal, state, municipal and private sources which relate to general pediatrics and/or primary care. Our research seminars and the emphasis on health services research have given us an important scholarly component in our program but much of this remains invisible to the resident staff. Our scholarship is important because it keeps us competitive, but that has not protected us from interruptions in funding.

In summary, it is logical for a public hospital to emphasize training in general pediatrics, since we are not a tertiary referral center. Clearly, the educational goals of primary care match the service needs of patients who come to the municipal hospital for care.

Without an emphasis on general pediatrics, I believe that training at the municipal hospital would be in conflict with its service mission. But the issues identified in educating for general pediatrics are not confined to the public hospital, but have application to a broad range of pediatric training programs, including tertiary care hospitals devoted exclusively to the care of children as well as to any academic, public, general, or community hospital where children receive care and residents are educated.

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PRIMARY CARE PROGRAMS: THEN (1980) AND NOW (1990)

Steven A. Wartman, M.D., Ph.D., Director
Division of Internal Medicine
Rhode Island Hospital

I plan to contrast what it took to build a general internal medicine program from scratch in 1980 with what I think it would take in 1990.

1980

In 1980, my highest priority was in educating department chairs, administrators, and hospital directors about the value, meaning, and reasons for the need for primary care programs. My themes were the importance of continuity of care and the need to develop a better balance between inpatient and outpatient training. This effort occupied an inordinate amount of my time but was absolutely vital in 1980.

Federal support was absolutely necessary to get a general internal medicine program going. Competitive federal funding provided much needed credibility. It gave us the sanction to go ahead and build a program that was experimental. It provided the luxury of buying some additional faculty support and resources to build the program. It helped to support some of our residents' time in the ambulatory setting as well.

Resident support was essential because we needed to increase the total number of residents training in internal medicine at our institution in order to cover existing inpatient service requirements. We couldn't simply convert a categorical resident's slot to a primary care slot because that left a deficit in inpatient coverage since primary care residents spend less time on the wards. This is not a strategy that I would recommend for 1990.

We developed our own particular program based on the block-type format for education in primary care settings. The theory behind the Block system is that in order to educate residents properly in the ambulatory setting, one had to remove them entirely from the inpatient environment for "blocks" of time. It was essential that ambulatory medicine not be treated as an "add on" to inpatient care During ambulatory block, residents spent about half their time in continuity of care, a quarter in ambulatory specialties (e.g. GYN., dermatology), and a quarter in behavioral sciences, seminars and journal club. When not on block, residents spend one-half day/ week in the outpatient clinic.

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We needed to upgrade our existing medical clinic. We needed to increase staff, hire nurse practitioners, and to develop a system to promote continuity of care for our patients. We developed a 24-hour, 7-day-a-week on-call system for the medical clinic. The role of nurse practitioners underwent considerable discussion. We finally concluded that they would best serve in the role of "continuity-gap providers", caring for residents' patients on their team when the residents were not available. We also needed to train physician faculty, as clinic preceptors, and to develop an ambulatory care core curriculum.

During this period it was critical to assemble and maintain a quality teaching faculty. Faculty development, therefore, was accorded a high priority. It took us 3 or 4 years to get a faculty on board with the teaching program, to get them publishing some papers, and to make them feel that they are part of a unit. I didn't want to lose faculty through failure to be promoted. Fortunately, Brown has two main promotion tracks: research scholar and teaching scholar. These tracks are not distinguished by different names or different titles. The criteria are different, however. Both require publications and national and international recognition at various levels. Many faculty in general internal medicine are natural teaching scholars. As of this academic year, we have had three of our faculty promoted (two associate professors and one full professor).

The period up to the present time has been one of continued growth and development. One of my major efforts has been to increase the visibility and recruitment efforts of our program. This has included published articles, presentations at national meetings, and a detailed structuring of the applicants' interview day.

We have had continued federal grant support each year since 1979. I have gradually converted these monies to the support of non-clinical faculty in the areas of behavioral science, medical ethics, and communications skill.

These were the major efforts during our first few years as we tried to get the program off the ground. Frankly, I felt at that point very vulnerable. If our efforts should fail or if we didn't match well with applicants, I was concerned that the entire program might be scrubbed. It was a very scary feeling.

As the program became more well known and successful, it eventually surpassed the existing categorical program at our institution in popularity and in the "quality" of applicants. As a result, we began to gradually covert existing categorical slots to primary care slots so there are today approximately equal number of residents in each track.

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1990

I would now like to turn to the subject of what it might take to develop a similar program in 1990. First of all, I am very grateful that the issue of credibility is not as big as it was in 1980. I don't think there is as much of a battle to fight, and it has been very gratifying to see the tide turn in favor of the kinds of things that we were pioneering 1980.

One major issue for 1990 concerns the so-called "service/education conflict" in residency training. It is a topic of a paper that we are presenting at the 1989 Society of General Internal Medicine's National Matting in Washington. What we endeavor to do in this paper is to "separate" training and education. I won't go into the details, except to point out that resolution of the service/education conflict is central to the future of primary care residencies. A major point of the paper is that merely shifting more training to the outpatient setting does not resolve the service/education conflict but may merely shift it to the outpatient setting from the inpatient setting. New strategies for resident education are needed, as are new ways to care for sick patients in the hospital. We are going to be seeing, in the 1990's, new concepts of what is meant by "teaching" service. Clearly, there will be more and more uncovered patients in the traditional sense in our teaching hospitals. As a result, we will be developing new cadres of faculty, both full time and voluntary who will care for patients with residents as partners.

One of the most critical issues for the 1990's is the need to attract more students to apply to our training programs. This represents a key challenge which should, in my opinion, be jointly shared by all the primary care disciplines along with the support of the federal government.

I think we need to make a major thrust in 1990 in the evaluation of our residents and of our programs. We need to pay particular attention to the professional development of our residents. Along with this, I believe our programs are going to need formally trained, Ph.D. level educators who work with the residents and faculty and help guide curricular development. Career guidance is another area needing special attention.

Many of our training programs care for the poor and medically underserved. There sometimes seems to be a "marriage" between our primary care training programs and the vulnerable in our society. Our own experience, over the past ten years, has been one of an ever increasing number of poor and uninsured patients coming to our program for care. I think that is probably reflected in other places around the country as well. This needs to be dealt with in a constructive way. We have to ask ourselves about the quality of care we provide.

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We need to examine the accessibility of care for those patients and the need for our residents to have a deeper understanding of the communities in which their patients live.

At the same time, paradoxically, there is a need to provide residents with normative practice experience. By normative, I mean a broad distribution of patients and problems. This is a difficulty that we are encountering and will continue to encounter in the 1990's.

We need to continue to fight very hard to mainstream our programs academically. Someone mentioned earlier that primary care programs have been, to a certain extent, growing up on the periphery of academic medicine, whether it is in the community hospitals (in the case of family medicine) or in divisions of general internal medicine within large departments of internal medicine. We need to mainstream our programs through the development of patient-centered research programs. I am confident that the pool of monies available for such research will undergo a major expansion in the next decade.

Lastly, a big question for the 1990's involves the issue of combining the various forms of primary care training into a more efficient model of graduate medical education. Does it make sense to consider combining training for family medicine, general pediatrics and general internal medicine in some imaginative way that reduces the cost of training, pools faculty strengths and resources, and reduces destructive competition so as to produce a better "product"? This is to me an experiment waiting to happen.

I would like to say more but in the little time remaining would like to give you a brief precis of my experience with the federal training grant program for general internal medicine and general pediatrics. I have served on the review panel for six years, as well as having been a grant recipient. Thus, I have experienced it from both sides. It is a vitally important program and given what has been happening to teaching hospitals, it is even more crucial now.

As a grant reviewer, it has been interesting to see where programs have fallen short. One common reason for not receiving approval has been the failure of the applicant to meet the "25 percent rule", a standard which requires that 25 percent of each resident's total training time be in continuity of care. Parenthetically, this is very different from the new RRC requirements in which 25 percent of resident's time must be in ambulatory settings, not just continuity practice. I personally support the rule because I think it has forced programs to truly be committed to primary care to comply. My understanding is that this requirement will be reduced to 20 percent in the near future.

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The bottom line is that, in the current climate, federal grant support is crucial to develop and to sustain the primary care programs. It may prove to be even more vital in the next few years as economic pressure continues to increase on teaching hospitals.

Discussion

Discussion of the presentation by program directors noted that if program directors are to be able to negotiate with hospital administrators and establish beneficial arrangements, the financial relationship between teaching hospitals and the primary care residency programs needs to be properly understood. Some discussants pointed out that hospitals derive greater revenues from patients admitted by subspecialists than from the smaller volume of admissions by primary care physicians. Other discussants however suggested that there needs to be proper appreciation of the savings that can be derived from the existence of the primary care outpatient clinic. The length of hospital stay is reduced because preadmission diagnostic workups as well as post discharge follow-up are performed in the clinic. This reduction in inpatient costs is particularly important for hospitals that provide uncompensated care. However, it was also noted that while such savings to the hospital are real, the benefits to the hospitals of primary care ambulatory programs are small when compared with the benefits from other programs.

The Allocation Of Resources At The Institutional Level

This session of the workshop used a case study method of discussion whereby four panelists were given, in advance, a problem to address. A moderator guided the discussion. Panelists were the dean of a medical school, the chairman of a department of medicine, the president of a major teaching hospital, and a vice president of a major, not-for-profit, hospital system. Each participant was asked to consider the financial resources that he would try to obtain to support the residencies, and the negotiations in which he would engage with other actors.

The exercise was developed for to illuminate the following:

- the decisions that need to be made
- the coalitions that must be built
- the different sets of constraints on people involved in various positions in the negotiations process

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- the trade-offs and options available

The Problem

An academic health science center with an internal medicine program wants to establish a primary care track eventually totaling 18 residents — six per year. The existing internal medicine program has 45 slots, 15 per year. Since it is not possible to expand the overall size of the program the primary care track will reduce the number of residency slots for the existing track to 27.

Because the program intends to apply for a federal grant, each resident must, in the course of three years, meet at least the federal 25 percent continuity requirement. Thus in the first year at least one half day per week is needed in the ambulatory setting, in the second year two half days per week, and in the third year four or five half days per week are needed. Alternatively residents could do at least three half days per week in the ambulatory setting throughout three years. The ambulatory experience will be in an outpatient clinic in your hospital.

The federal grant award will provide $60,000 in the first year, $90,000 for the subsequent two years, and there is no assurance that the grant will be renewed. Because of low Medicaid payments by your state, and a large non-paying patient load, patient revenues will cover roughly one third of the cost of the program (residents stipends, faculty salaries, administrative overhead). This leaves you with approximately 55 percent of costs unfunded.

The problem for you to address is how to fund the remainder of this program. In particular we would like to know under what conditions you would be able to obtain funds from the program, or hospital, the faculty practice plans or other institutional sources. The state has no history of support for graduate medical education. Who in the hospital and the medical school will support and who will oppose your attempts to fund the program? Also, how would you replace the inpatient care services lost when the residents move to the outpatient clinic?

Internal Medicine The director of the department of general internal medicine greeted the proposal with enthusiasm, believing that the nation needs general

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internists, and that individuals who complete such training programs have a higher probability of practicing primary care in underserved areas than those trained in subspecialties. Since most primary care in his state is provided by internists, establishing the primary care internal medicine track, rather than a family practice program, articulates well with established, practice patterns. Moreover, some faculty members have been urging the chairman to move to establish a primary care track. The program is fortunate, and possibly unusual, in having faculty with the necessary qualifications, background and interest to provide a core of teachers for the primary care track, and to write a grant applying for federal funds. The chairman believes that if a totally primary care oriented program is the eventual goal, to initially establish a track is the more prudent approach. It avoids antagonizing subspecialty faculty, and allows a period during which it will be possible to test the availability of support for the training.

One possible source of financial support for the program that is sometimes controlled by the department chairman is the faculty practice plan. It should, however, be noted that there exist many of ways of organizing faculty practice plans. In some schools the dean controls none of the income, in some schools the dean controls it all; similarly the control of the department chairman varies.

The two principle decisions-makers with whom the chairman must try to negotiate for support are the dean of the medical school, and the president of the university hospital. The chairman would ask the dean for some faculty support, arguing that the medical school benefits from the teaching services of residents; that the new thinking and behavior taught in the primary care track would enhance the education of medical students; and that the work of the faculty in the new track would be supportive of the educational and research goals of the medical school as it adapts to the changing environment and the needs of the twenty first century. The chairman would ask for support from the hospital administration on the grounds that hospital revenues would be enhanced by increased admissions.

Other sources of funds that the chairman would try to tap include:

- affiliated hospitals, on the grounds that having residents would help these hospitals develop faculty and gain prestige.
- the local community, on the grounds that the program could help the locality provide care for low-income, or uninsured populations.
- the state, on the grounds that the program could put satellite clinics in underserved areas and that graduates of the program might settle in those areas.

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Dean of Medical School In most schools the issue of providing support for the new primary care track would be discussed between the dean and the chairman, without much involvement of other departments.

The dean would view a proposal to create a primary care general internal medicine track from the position of a decision-maker with responsibility first for medical students. Graduate medical education takes second place. Thus, the chairman's argument that the new track would strengthen faculty in ways that mesh with the missions of the medical school would carry weight. The dean would discuss the ambulatory practice arrangements and the quality of the practice, and consider whether the model would be one into which he might ultimately want to integrate the medical students. The dean would agree to provide some support for faculty, but finds no reason to directly support residents in this track. Since federal grant support may cease after three years, the dean would not put himself in the position of offering ongoing financing of residents, which might in the future conflict with his primary responsibility — medical students.

Sometimes the dean has substantial control of the faculty practice plan, making it possible for the dean to make allocation decisions that benefit the institution as a whole, and the hospitals with which the medical school is closely affiliated. Even so, the dean must be assured of the support of the members of other departments. Since he does not believe that the new residents would bring significant numbers of new patients to the subspecialists, and since it is not clear that the additional patient volume would be composed of paying patients, it would be very difficult to make a case for giving the department of medicine a greater share of the faculty practice plan income for the purpose of supporting the primary care track. This would be the case despite the fact that there is precedent for some cross subsidy for support of faculty from the high earning groups to the lower earning groups.

Hospital President Before embarking on discussions of what support the hospital would offer the primary care track, the hospital president wanted to clarify some notions that the chairman of internal medicine may have.

First, it is often stated that the prime reason that hospitals have residents is because they provide less expensive care than fully trained physicians. It would be more accurate to say that hospitals support house staff programs in response to faculty definition of what the residents need, and that despite its own service needs a hospital would not create a residency program unless there was a qualified department head, adequate patient volume, and a belief that it is appropriate to train the particular type of resident.

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Second, the notion that the hospital benefits from the revenue from ancillary services generated by house staff is false. Hospitals are increasingly reimbursed on a per diem, per case, or capitation basis. Thus increased use of ancillary services is financially negative, not positive.

The approach that the hospital president would take to a request for support of the primary care track residency is one of bargaining. How would the faculty help with coverage of the inpatient services that are left uncovered by the reduction in inpatient service time of the residents? Would the faculty build a cadre of non-teaching patients for whom they would be responsible? The department must help the president of the hospital reconcile the competing values of sustaining a financially viable hospital while fulfilling the requirements of a quality teaching program. Thus the more important question for the hospital president is whether the size of the residency programs relates to the population being served, and whether the residency programs together form a coherent and uniformly strong whole. These are the overarching considerations within which the question of financing a residency is considered.

Community Hospital Administrator The principle question that the administrator must ask, is whether the ambulatory care residency fits into the hospital's long range plans. Will the residency undermine plans for the relationship with community physicians? How does it mesh with the plans for physician recruitment? The administrator must also ask whether the hospital has the prestige needed to recruit physicians into the primary care residency program. To enhance its academic standing an affiliation with a nearby medical school might be warranted. However, this is feasible only if the teaching hospital and the community hospital do not compete with each other. Whether an affiliation can be established is to a large extent dependent on the leadership of the institutions, particularly on how the department chairman views the role of the community hospital. With interested leaders the chances of establishing a successful affiliation are high.

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POLICY OPTIONS

Sandra C. Peinado, Fellow, General Internal Medicine and John M. Eisenberg, Sol Katz Professor of General Internal Medicine University of Pennsylvania School of Medicine

(This presentation summarizes the paper that can be found in Appendix B).

To satisfy the nation's need for well-trained primary care physicians, graduate medical education in primary care requires adequate financial support. The current mechanisms of GME financing favor inpatient and procedural care, making the support of primary care programs difficult, since they are more oriented towards outpatient evaluation and management. The majority of graduate medical education funding comes from patient care reimbursement through Medicare Part A direct and indirect payments, and other third party payers. This scheme results in difficulties for primary care programs in resident and faculty compensation, as well as general difficulties for primary care program development.

Criteria for evaluating proposals that aim to improve the financial support of primary care programs include financial, administrative, and educational implications of the options, as well as the views of interested stakeholders. The financial criteria are; 1) Any proposal should be budget neutral, at least in terms of the federal budget; 2) All those who benefit from GME in primary care should contribute to paying its costs; and 3) Funding should be both predictable and sufficient. The administrative criteria are: 1) The implementation of any proposal should be administratively feasible; 2) The ongoing administration of any new funding scheme should be both simple and 3) inexpensive. The educational criteria include: 1) Any proposal should maintain curricular autonomy and flexibility for primary care educators; 2) The growth and development of primary care curricular elements in already established residencies should be fostered; 3) High quality programs in non-primary care specialties should not be adversely affected; and 4) Proposals should include incentives that favor high-quality primary care programs.

Stakeholders are the entities that are most likely to be interested in and/or affected by change in GME financing. These stakeholders include the following: society; the federal government; the Health Care Financing Administration; state governments; private payers; teaching and non-teaching hospitals; physicians; primary care specialties, educators and residents; non-primary care specialties, educators and residents; and patients.

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The alternatives for sources of funds to support primary care GME include changes in existing Medicare payments, an increase in categorical GME funding, an increase in ambulatory payment, an increase in grants, commitments from future employers, and a redistribution of current funds. Alternatives for spending these funds to aid primary care programs include dividing the sources in three ways: on a per-resident basis, by competitive grants, or by incentives for primary care education. Each alternative for changing GME financing was analyzed using the criteria and stakeholder views outlined.

No single remedy will be sufficient to rectify current GME financing mechanisms. Instead, several solutions will be needed simultaneously. Judged against the proposed criteria, the preferred options for raising money for primary care graduate medical education are as follows:

- Adopt a Resource Based Relative Value Scale for payment of physicians and improve coverage of outpatient services.
- Include residents' primary/ambulatory care time in the calculation of resident FTEs for Medicare direct and indirect medical education payment, add incentive for primary care training in direct payment, and recalibrate payment per resident to maintain budget neutrality.
- Increase state support through Medicaid participation in payment for GME and through grants for primary care education.
- Require participation in payment for GME by other payers, including HMO's and private insurers, coupled with a surcharge or tax on revenues of non-teaching hospitals.
- Increase and redistribute Title VII funding for faculty development, curriculum design and other innovations. Encourage foundation support for similar purposes. Faculty development, in particular, should be allowed a separate funding stream.
- Experiment with programs to commit residents to future employers, who in turn would support primary care GME.
- Experiment with a direct medical education subsidy for outpatient payments to complement payment to hospitals to cover the costs of medical education. Consider an indirect adjustment to compensate for the higher cost of practice (e.g., overhead, more severely ill patients) in teaching setting.

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The spending options judged best would involve division of the funds on a per resident basis to residencies in internal medicine, pediatrics, and family medicine for the development of primary care curricular elements through faculty support, resident support, ambulatory site costs, curricular support, academic unit costs, increased ambulatory time, and primary care cooperative efforts, or to use as the individual residency chooses. This base funding would be coupled with competitive grant funding to stimulate innovation and faculty development.

In addition, the appropriate and designated use of Medicare direct payments should be enforced by HCFA.

Discussion

Discussion of the paper presented by Dr Pienado and Dr Eisenberg focused mainly on the implications of the options for change listed in the paper. A theme that underlay most of the discussion was the pervasive sense that health policy today is being driven by the politics of deficit reduction. Thus the federal, state or local government budget impact of recommendations was frequently the subject of comment.

Resource Based Relative Value Scale The option of paying for services on the basis of a resource based relative value scale (RBRVS) was generally thought to have potential for both facilitating the financing of primary care residency programs, and for making the primary care specialties more attractive to physicians by decreasing the income differential between primary care and other specialties. There was also support for the elimination of the differential in payment for the same services when performed by different specialists that occurs under the customary, prevailing and reasonable basis of payment used by Medicare.

While the adoption of the RBRVS by Medicare would effect only Medicare payments, (by one estimate the impact would be on only 10 percent of the revenues of the average family physician) it would be an important move signaling to the medical profession and others an enhanced appreciation of the importance of primary care services. Equally important, it would increase revenues available to faculty practice plans thus easing the financial stress of financing ambulatory training. On the other hand RBRVS would not substantially increase support for training programs with substantial numbers of non-paying patients.

Unless all payers adopt a RBRVS, is a strong possibility that physicians who provide procedurally-oriented care will continue their usual charges for

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services, or even increase them to make up for income lost by reductions in Medicare payments, while primary care physicians are likely to charge all payers at the increased medicare level. Thus total costs for physician services in the private sector would be at risk of escalation. Whether third party payers would be able to counteract this is doubtful. However, groups such as Preferred Provider Organizations may be able to negotiate RBRVS payments on a budget neutral basis.

Medicare Payment for Direct GME Costs The Pienado and Eisenberg paper suggests the option of incorporating incentives for the development of primary care GME programs into the Medicare direct GME payments, and recalibrating the per resident payment to maintain budget neutrality. This idea was included in a bill introduced by Congressman Henry Waxman in 1985. Although some other restructuring of Medicare direct payments has been accomplished, this proposal was not adopted. It is now, however, a more familiar concept than when first proposed, and may therefore have a greater chance of success. While this proposal incorporated incentives to expand primary care programs, it did not directly tackle the question of funding residencies in ambulatory settings. However, the additional revenues obtained by primary care programs should help make available resources to support ambulatory training.

Policy approaches to improving the specialty distribution of physicians and the appropriateness of primary care training that try to equalize the financing of training for primary care and other specialties are based on the assumption of deficiencies in the revenues streams, and excesses in the costs of primary and ambulatory training for which compensation must be found. This policy approach requires analyses of comparative costs and revenues for which the data are today inadequate, and is subject to change as methodologies develop. A policy that creates financial incentives for primary care training uses a simpler concept. It is based on the notion that if existing funding patterns do not generate the desired outcome incentives should be introduced that will encourage the desired behavior. Such a policy can be evaluated by the extent to which its goals of furthering primary care manpower are achieved, rather than by using cost accounting methods to calculate whether a level playing field between primary care and other specialties has been achieved.

Medicaid The option of mandating that Medicaid programs should support GME by following Medicare regulations, or any other procedure, in an era of constrained budgets requires a reallocation of resources. It will be difficult, and undesirable, to persuade policy-makers that GME deserves support at a time when states are attempting to assemble resources to sustain or improve coverage of such populations as pregnant women and children.

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Medicare Payment for the Indirect Costs of Education It is argued that ambulatory settings that train residents incur additional costs similar to those incurred by inpatient GME training. This provides a rationale for fully extending Medicare indirect payments to ambulatory settings. Furthermore, Medicare indirect cost payments are roughly double the direct cost payments, therefore reallocation within that pool will be less painful to the losers. However, since the level of Medicare indirect payments is being reexamined and cuts are likely to occur, the impact of a policy based on manipulation of this shrinking revenue sources is likely to be weakened. Furthermore, cuts in revenues from Medicare indirect cost payments that erode hospital operating margins are likely to reduce commitment to GME, with primary care bearing the brunt of cuts.

Federal Grant Programs Grants to support family medicine, general internal medicine, and pediatrics training programs have played a major role in generating new primary care residency programs. However, it is unrealistic to believe that any expansion of the grant programs will occur, and even if additional money were to become available it would not be prudent to rely on grant money to rectify the fundamental financial problems of placing primary care residents in ambulatory settings. Grants can be vital to the initiation phases of a programs and provide the impetus for innovation, but should not be relied upon for ongoing support.

Third Party Payers Policy options to improve GME financing through contributions from third party payers are sometimes based on the proposition that third party payers do not contribute to GME. This proposition is disputed on the grounds that GME is incorporated in charges paid by third party payers. However, this contribution is being eroded as payers increasingly negotiate discounted charges.

A proposal to urge third party payers to make voluntary contributions to GME is unrealistic. The insurance industry is highly competitive and operates with low margins, as evidenced by the number of companies that have abandoned health insurance because of low or zero profitability. In such a market the industry will neither absorb the cost nor be able to pass it on to the payers, generally employers, who are becoming increasingly concerned about the cost of health care coverage.

The alternative — trying to pass legislation to tax the insurance industry — is also problematical. The increase would be passed on to employers, who are vocal in legislative arenas. Furthermore, such a tax would be inequitable since it

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could not be imposed on self-insuring corporations, and by increasing insurance costs it would also be likely to cause greater numbers of employers to turn to self insurance.

Another, indirect, approach to taxing third party payers would be to tax hospitals which, in turn, pass the cost on to the third party payers. This strategy poses dangers to hospitals that provide large amounts of uncompensated care and may lack a sufficient base of charge paying patients on whom to pass the cost. Furthermore, some states use a tax on hospitals to garner revenues with which to pay for uncompensated care, making this mechanism less accessible for use by policy makers attempting to enhance GME revenues.

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Appendix B

Papers Commissioned by

The Committee to Study Strategies for Financing Graduate Medical Education for Primary Care Physicians in Ambulatory Settings

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THE COST OF GRADUATE MEDICAL EDUCATION IN OUTPATIENT SETTINGS*

Judith R. Lave, Ph.D.
Professor of Health Economics
University of Pittsburgh

Introduction

Until recently, medical students and residents received most of their clinical training in hospital inpatient settings. Educators and others who are interested in training physicians for practice in primary care have been critical of the focus on inpatient training for some time (MacLeod, 1970; Schroeder et al, 1986; Karpf and Levey, 1986); they are now joined by those who realize that, because of changes in medical practice, there is a need to conduct more physician training outside the inpatient setting for all physicians.

However, as training is shifted from the inpatient to the outpatient sector, a whole set of issues are raised. How should training in the outpatient sector be organized? How much does it cost to train residents in the outpatient setting? Is it more costly to train medical students in the outpatient setting than in the inpatient setting? What will be the effect of developing a program in outpatient training on the net revenues of an institution? Do we need different ways of paying for services if we change the locus or training?

The questions above are very general. The term "outpatient setting" embodies a range of practice settings. Formal outpatient clinics, Health Maintenance Organizations, prepaid group practices, surgi-centers and even doc in the box, are all outpatient settings. Some of these have been training sites for medical students and residents since medical schools were first established. However, in the past these settings have been of very limited importance, and the type of training provided in those sites was not geared towards developing primary care physicians.

* I would like to thank Lester Lave, Gordon MacLeod and Jessica Townsend for helpful comments on an earlier draft; Lawrence Clare for bibliographic help and Bruce Block, Marian Block and Michael Karpf for describing their training programs.

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In this paper I address some of the issues related to the cost of training medical students and residents in primary care. I begin by reviewing briefly the literature on approaches to estimating the cost of graduate medical education in the inpatient setting. Next I develop an analytical framework for examining the cost of training in the outpatient sector and the cost of introducing medical students and residents into outpatient clinical practice is explored at some depth. I then examine the relevant empirical literature related to this issue. I go on to examine cursorily the "financial" impact of the implementation of training programs in primary care. I then address a number of other selected issues related to training in primary care and conclude with some recommendations for future research in this area.

The Cost of Medical Training in Hospitals

Teaching hospitals are multiproduct firms; they produce medical training, patient care, research and community services. For the many services that are joint products, it is impossible to allocate the costs among them in a nonarbitrary fashion. Conceptually, the cost to society of medical education and training in the hospital setting is equal to the difference in total costs (both physician and hospital costs) between a hospital which provides these educational services and one that does not assuming they differ only in the educational programs. It is necessary to look at both physician and hospital costs because the trainees provide patient care services in place of those ordinarily provided by trained trained physicians.

With some exceptions, analysts have not tried to estimate the cost of medical education as defined above because of the difficulty in determining the costs associated with providing physician services in hospital settings. In general, hospital accounting records include information on all of the expenditures incurred by hospitals (nursing salaries, pharmacy drug costs, lab equipment and so forth). These expenditures include the direct costs of the hospital training programs (salaries of teaching physicians, resident stipends and fringe benefits as well as hospital overhead costs that are allocated to the training programs). Data on payments for services rendered to patients by physicians in hospital settings are kept by patients and in the claims files of the third party payors.

In general analysts have focused on determining what I will refer to as the gross costs of graduate medical education. The gross costs of graduate medical education have two components: direct costs of the hospital residency programs (defined above) and indirect costs which are the increase in patient care costs incurred by the hospital because it is involved in graduate medical education. Patient care costs are higher because there are increased space needs, additional

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record keeping requirements, decreased productivity of other staff members, and excess test ordering by residents because of their inexperience.

Estimates of the direct costs of graduate medical education are obtained from hospital accounting records. Since the indirect costs cannot be measured directly, they are determined statistically (Lave, 1985). In most cases, analysts estimate "cost functions" in which hospital inpatient costs (excluding the direct costs of graduate medical education) are regressed against a series of variables known to influence hospital costs such as case-mix, hospital wages, hospital bed size and some indicator of the hospital's teaching status. (Anderson and Lave, 1986; Sloan, Feldman and Steinwald, 1983; Thorpe, 1988). The specification of the estimating equation varies across studies as does the measure of hospital teaching activity. (The most common measures are the number of residents per bed or an indicator of the hospital's teaching affiliation - member of the Council of teaching hospitals; teaching hospital but not a COTH hospital, or non-teaching). Analysts thus estimate the incremental effect of teaching on hospital costs (minus the direct costs of teaching) once the effect of other factors known to influence these costs have been taken into consideration.

The results of these analyses indicate that the indirect costs of teaching are positive; i.e., that hospital inpatient costs increase with the extent of the hospital's involvement in medical education. However, the estimated size of the indirect costs depends upon the group of hospitals studied as well as measures used to control for other factors known to influence costs across hospitals. Nationally, a one percentage point increase in the number of residents per bed is associated with about a 5 percent increase in inpatient care costs per case.

Analysts are aware that these are "gross" costs of graduate medical education. Some investigators have tried to estimate "net costs" by estimating physician costs associated with a hospitalization either by obtaining estimates of physician services from medical records (Arthur Young, 1986) or by merging information on physician claims with cost information from hospital accounting records (Cameron 1985). The results of these studies indicate that residents are partial substitutes for fully trained physicians. Cameron for example, found that in California payments to physicians for services provided to Medicaid inpatients were lower in major teaching hospitals by Medicaid's share of the residents salaries in those hospitals.

These studies shed no light on whether graduate medical education programs lead to increased hospital profits (or reduced losses), increase physician incomes, convey prestige on a institution, or are the source of other unmeasured benefits. The profitability of graduate medical education programs will depend on how these programs affect hospital admissions and on how hospitals and other

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providers of services are paid for the services that they provide. Under the financing arrangements that prevailed in 1989, available information indicates that graduate medical education programs in hospitals were profitable.

Cost of Training in The Outpatient Sector: An Analytical Approach

In considering the cost of training programs in the outpatient sector, the appropriate question to be raised is: what additional resources are needed to accomplish this task or what is the increased monetary cost of adding this activity (Delbanco and Calkins, 1988; Gavett and Mushlin, 1988)? (If all the resources are costed out, then these questions will have identical answers.) However, these questions are different from an equally important one: will the implementation of this program generate net positive revenues? To the sponsoring institution or the manager of the training program, the impact on net revenues is the more important question.

The cost of the training program will depend on its nature. Training programs can range from the development of a residency program in family practice in a nontraditional setting, the enhancement of an outpatient focused primary care component in an internal medicine residency program, or the implementation of a clerkship for medical students in an HMO or family practitioners' office for 4 weeks during the summer. Since the programs differ, so too will their costs.

Consider the cost of adding residents to a primary care practice. (Medical students could easily be added to this example.) This case which addresses the following question - is it more costly to provide medical care in the ambulatory setting in which residents are both being trained and are providing services than it is to provide care by fully trained physicians-is explored in depth because it has generated the most interest. In the discussion that follows, the term FT (Fully Trained) physician - is used to describe physicians who have completed their residency training.

In the ambulatory setting, residents acquire skills while "learning by doing". However, while they are practicing, they receive faculty input through direct supervision, case conferences, chart review and consultations. The nonphysician component of the cost of care may vary with the level of training of the resident. For example, residents may order more tests, may require more nursing time per visit or may use more examining room time than more experienced physicians; that is, there may be some indirect costs of graduate medical education (as the term is used in the inpatient setting) in the outpatient sector.

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In order to focus on the most important factors influencing the cost of training, assume that only physician services are needed to produce patient visits. Figure One indicates both how productivity varies with the amount of training that a physician has as well as the amount of faculty input provided to the resident. The figure indicates that a FT physician working full time in the clinical setting provides OJ visits per unit time while the number of visits that a resident provides varies with the year of training as indicated by the curve CD. As suggested by the curve EF, the amount of faculty input needed per average visit provided by the resident decreases as the residents become more experienced.

In Figure Two, OS indicates the average cost of a visit provided by a FT physicians. RT indicates the average cost of a visit provided by the resident. At first, the cost per visit provided by a resident is higher than that provided by a FT physician, however it begins to fall as faculty input decreases and resident productivity increases. The curve suggests that the cost may begin to increase towards the end of training because the residents' salaries increase and the number of hours worked decrease leading to an increase in the cost per hour.

Although the general shapes of Figures One and Two should be true for all settings, the details of the curves will vary from site to site. For example, the position of CD in Figure One will depend upon whether there is an adequate flow of patients through the clinic, the efficiency with which the practice is operated, and the pace at which residents practice. (The pace could influence both the quality of patient care provided and the quality of the clinic experience from the training perspective). The position of EF will vary with the amount of training and feedback the resident actually receives. Finally, the relative positions of OS and RT will depend upon the hourly cost of residents and the faculty.

Thus, the net cost of training will in large part depend upon the amount of faculty input into the training process, the relative income of the faculty and residents and the flow of patient visits. It will also depend on the mix of residents: in general the net cost will be positive for medical students and for residents early in their training and negative for more senior residents. Because the net cost of training depends upon so many factors, it is not surprising that empirical studies of the cost of training, which usually considers single sites, often reach very different conclusions about both its size and direction.

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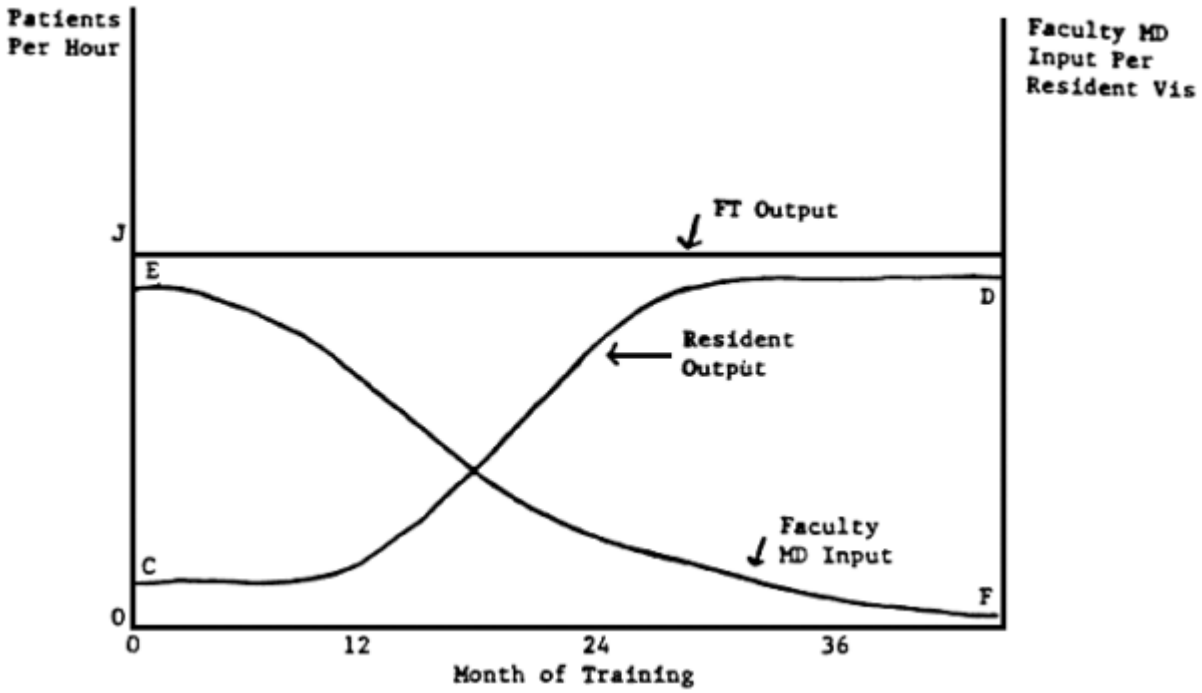

Figure One

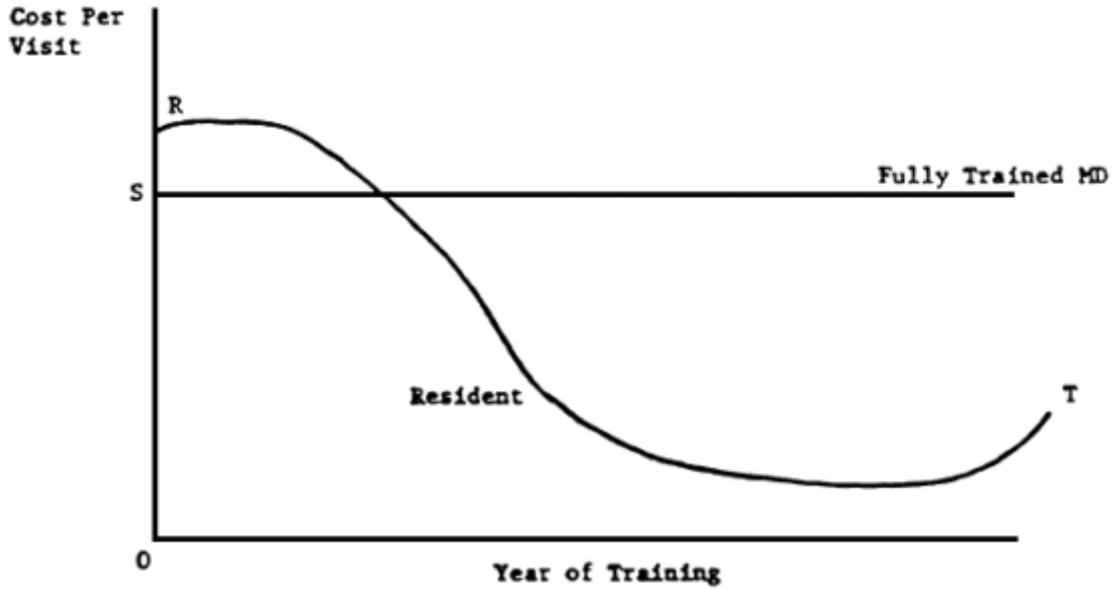

Figure Two

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Empirical Studies of The "Net Cost" of Training In The Outpatient Setting

Several studies have attempted to estimate the cost of training medical students and residents in the outpatient setting. Some of these studies have examined only the gross costs of education; but many have investigated the net costs of education. In this respect, this research is different from that on the cost of graduate medical education in the inpatient setting. The work on the net cost of graduate medical education can be classified into four groups: time and motion studies, replacement cost studies, relative cost studies and marginal productivity studies.

Time and Motion Studies

In time and motion studies, the investigators directly observe the various providers of care to determine how they spend their time. However these studies often do not provide useful information into the incremental cost of providing training. This is a particular problem when the faculty members are training residents at the same time that they, the faculty, are providing care or are training a number of people simultaneously. However, time and motion studies can provide some information on the amount of faculty time that the residents use when they, the residents, are the primary providers.

In a recent study of the cost and efficiency of providing services in 15 general internal medicine ambulatory practices in teaching hospitals, Kosecoff and associates (1987) used time and motion studies to determine how much time patients spent with their primary providers[1] (faculty member, resident or nurse) as well as how much time they spent with the attending physician and nurse during their visit to the primary providers. The investigators found that for the patients' first visits, PGY1s

[1] In these practices patients were assigned to one of several types of practitioners, residents or fellows, faculty members or nurses who served as the primary provider during that visit. However, during a visit to a primary provider, other providers would be involved in the care. A nurse could be present in the room or provide distinct services; the attending physician could see the patient being treated by the resident or consult with the resident on the case.

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(residents in their first post graduate year) spent a statistically significantly longer period with the patient than did the other classes of primary providers (MDs and nurses); while for follow up visits, faculty physicians spent a significantly shorter time. They also found that the attending physicians spent a significantly longer period of time with PGY1's for both first and follow up visits (when the PGY1 was the primary provider) than they did with did PGY2s and PGY3s. There was no significant difference in the amount of time the patient spent with the nursing staff by type of primary provider.

Kosecoff et al. estimated the direct physician and nursing cost per visit first by estimating the average hourly wage for each type of provider and then by multiplying that by the proportion of time the physicians spent with a patient by type of primary provider. In the institutions studied, the average PGY1 earned $23,000 a year and worked 70 hours a week while the average associate professor earned $85,000 and worked 55 hours a week. The estimated average cost for a visit by type of primary provider is shown in Table 1. The main factor contributing to the difference in the costs across visits by type of primary provider is the amount of faculty time per visit [2].

On average, the faculty members spent very little time interacting with PGY2s and PGY3s. However, there was considerable variation in the amount of time the faculty spent with residents across the 15 practices. For example, for a follow up visit, when the PGY2 was the primary provider, the attending spent on average less than a minute with the patient in 9 of the 15 practices, between 1 and 6 minutes in 4 of the practices and over 6 minutes in 2 of the practices. (The amount of the time the attendings spent discussing the case with the residents outside of the examining room was negligible.)

[2] For example, the cost of the first visit is highest when the faculty member is the primary provider because most of the care is provided by the mostly costly provider. The cost of a visit to a PGY1 is high because, although the hourly cost of the PGY1 is low, the attending physicians spends a significant amount of time with the patient and resident.

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Table 1 Average Nurse and Physician Costs of Visits To Fifteen Internal Medicine Group Practices (in 1983 Dollars)*

Type of Primary Provider	First Visit		Follow-Up	
	Visits	Mean Cost	Visits	Mean Cost
	n	$	n	$
Faculty	87	21.40+	233	10.43#
Postgraduate Year I	32	18.03	80	6.33
Postgraduate Year II	35	9.24	145	5.44
Postgraduate Year III	42	9.55	120	5.47
Nurse Practitioner, Physician Assistant	10	17.85	91	8.20

* Based on actual time spent with patient (time-and-motion study).
+ No significant difference with postgraduate year I; $p < 0.01$ with postgraduate years II and III.
# $p < 0.01$ with all three postgraduate years and nurse practitioner.

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Replacement Cost Studies

In a replacement cost study, the following question is posed: if outpatient clinics continued to serve the same number and mix of patients, what would be the cost of closing the teaching programs and using full time practicing physicians to provide the services that were previously provided by the residents. Researchers who have used this approach have carefully studied the clinic practice (i.e. examined the number of patients seen per hour by faculty and by residents, asked questions about the use of other personnel, noted the use of examining rooms) and estimated how changing the physician mix would change the costs in that clinic. Their estimates are based on judgements not statistical analyses of data.

Two recent replacement cost studies have been reported in the literature. Delbanco and Calkins (1988) studied the effect of replacing residents with full time physicians at Health Care Associates, a primary care practice at the Beth Israel Hospital in Boston; while Gavett and Mushlin (1988) studied the same problem at a primary care practice at the Strong Memorial Hospital in Rochester. Residents in all three post graduate years provided patient care in both sites.

Table 2 presents estimates of how replacing residents with FT physicians would change the average cost per visit and its component costs at the two sites. As indicated by these numbers, Gavett and Mushlin assume that residents use space less efficiently than FT physicians; while Delbanco and Calkins assume that residents use relatively more of other staff time than do the FT physicians. Gavett and Mushlin do not indicate that replacing the residents would reduce the time of attending physicians, whereas Delbanco and Calkins indicate that such costs would be decreased by $3.59 per "visit". Neither team of researchers estimated the effect of the change on the use of ancillary services.

Gavett and Mushlin conclude that replacing residents with FT physicians would decrease the cost of care, whereas Delbanco and Calkins conclude that such a replacement would increase costs. The main factor leading to these different conclusions is not the different assumptions about how residents and FT physicians differ in their demands on other resources (space, nurses, etc.) but rather the assumptions about the relative costs of residents and FT physicians in the two sites. Delbanco and Calkins allocated about 5 percent of a resident's salary for a half day clinic session (this was based on a resident's work week of

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Table 2 Change in Cost Per Visit If Trained Physicians Replace Residents

	Faculty	Resident	Training	Fringe	Space	Other Staff	Net Change
GM[1]	$ 9.09	$-7.92			$-2.85		$-1.68
DC[2]	12.67	-1.68	$-3.59	$ 1.34		$-1.34	8.40

[1] Calculated from data presented in Gavett and Mushlin, 1988.
[2] Calculated from data presented in Delbanco and Calkins, 1988.

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90 hours) and assumed that the annual salary of a full time internist was $75,000. Gavett and Mushlin allocated 10 percent of a resident's salary for a half day clinic session and assumed that the salary for the board certified internist was $44,7600. (It is not clear why the assumed salaries for the internists are so different.)

Before and After Studies

In before and after studies, the investigators examine the effect of introducing residents or medical students into the practice setting. The introduction of medical students and residents would be expected to lead to a decrease in the hourly productivity of the "faculty" physicians because they will now be spending some of their time training and supervising. However, residents and medical students open the door to additional visits. The net effect of residents and students on the overall practice productivity can be determined. The information on the change in productivity along with salary data for FT physicians and residents can be used to estimate the net cost of training. (Information on the net change in practice productivity and the level of the resident's salary can be used to determine whether the residents are profitable.)

Kahn, Wirth and Perkoff (1978) studied the effect of introducing second year residents into a prepaid group practice in which both internists and pediatricians practiced. For the pre and post periods, they determined total visits; and using time and motion studies, they examined the way that the faculty physicians allocated their time. They also studied the relative use of examining rooms.

They found that the introduction of the residents in internal medicine was accompanied by a 23 percent decrease in patient equivalents (PE) seen per faculty internist per hour (2.6 to 2) while at the same time the residents saw 2 PEs per hour. They estimated that if net increase in PEs generated by the residents had been provided by salaried general internists (who worked the same number of hours as the faculty internist), it would cost 23 percent more than the cost of the resident. The introduction of pediatric residents into the practice was accompanied by only a three percent decrease in the number of PEs per hour (2.9 to 2.8) seen by the pediatricians while at the same time the residents saw 1.7 PEs per hour. Kahn et al. estimate that, if the increased PEs had been seen by salaried pediatricians, it would cost 17 percent more than the cost of the resident. (In making these estimates, they assumed the cost of a full time resident was slightly less than half that for a full time faculty member). They did not find any differences in the use of examining room between the residents and the faculty.

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These data indicate that in this case the "net cost" of teaching is negative. This finding is not too surprising since the residents were second year residents. The estimated savings may be exaggerated because the practice, particularly the pediatric practice, was underutilized prior to the introduction of the residents. It should be pointed out, however, that the internists spent 18 percent of their time teaching, the pediatricians spent less than 3 percent of their time teaching.

There have been a number of similar studies which have focused on the cost of introducing medical students into the ambulatory practice setting (Pawlson, Schroeder and Donaldson, 1979; Kirz and Larsen, 1986; Pawlson, Watkins and Donaldson, 1980). These studies indicate that medical students lead to a decrease in overall practice productivity. For example, Pawlson, Watkins and Donaldson estimated the effect of introducing medical students in the ambulatory clinical practices in a number of different practice settings. In some settings the students just observed whereas in other sites they participated in the care of the patient. The investigators found that the presence of students as observers did not effect the overall practice productivity but it did have a small effect on the cost of care. They found that when students participated in care the practice productivity decreased significantly; but the decrease in productivity was related to the level of training of the students.

Comparative Cost Studies

One approach to determining the "net cost" of education is to determine the differences in the cost per visit across different sites which vary only in the extent to which residents are involved in caring for patients. However, since it is unlikely that sites will vary only along that one dimension, statistical controls should be used to adjust for differences in factors such as case-mix and quality of care as well as the flow of patients through the different practice sites.

Pawlson and Watkins (1979) compared the cost per visit at a model family practice residency center in which residents (all three years) and fully qualified family practitioners practiced together with the average cost of a number of family practice sites in the same large prepaid group practice. Costs for materials and supplies were taken from expense data and each site was allocated its proportion share of indirect costs for space and general clinic administration. It was assumed that the unit was responsible for the residents' salary when they were present in that particular clinic setting. They found that the cost per visit was about 12 percent higher at the model family practice residency center than it was on average in the other family practice sites.

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It is, however, impossible to interpret the outcome of this study. The difference in the costs across sites may be due to the teaching program or to a number of other factors. The investigators suspect that compared to the other sites, the utilization rate of the family practice residency center may have been low. This possibility seems likely given the very small difference in visit physician costs ($7.45 vs $8.77) and the large difference in nursing costs ($5.72 and 2.31) across these sites.

Differences in the Use of Ancillary Services

There have been many studies which examine the differences in test ordering behavior of residents and FT physicians in the inpatient setting (see for example, Schroeder and O'Leary, 1977). (In fact these studies have provided some of the insights into the factors generating the measured indirect costs of graduate medical education.) In none of the studies of the net cost of training in ambulatory practice did the researchers analyze the use of ancillary services. Test ordering practices were usually not examined because of data limitations. There is, however, one study that does examine this issue.

Berkelhamer (1986) collected data on office based procedures, and hospital laboratory and radiology tests for 450 consecutive visits for pediatric residents and pediatricians. He found, controlling for age and patient visit category (health maintenance or illness), that the average charge per patient visit was higher for the residents' patients than for the pediatricians' patients. On average, the residents ordered laboratory and radiology tests in 35.8 percent of the visits while faculty members ordered them in only 14.4 percent of them. (There was considerable difference among both the residents and faculty members in their propensity to order tests.)

Summary

The studies reviewed above looked at only one aspect of the cost of training medical students in primary care: the net costs of having residents and medical students in the ambulatory setting, where they are both providing services and being trained. The conclusions of these studies can be summarized as follows. The cost of training medical students in the outpatient setting is positive. There is, however, no clear cut answer to the question: what is the cost of training residents in the outpatient setting? The answer to that question is: it depends. It depends on the general level of utilization and efficiency of the office practice, the level of skill of the resident which increases with the years of training, the amount of faculty input into the training process and the differences in the

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relative incomes of the trained physician and the resident. Since these factors will vary from site to site, the net cost of training will also vary from site to site. In general, the net cost of training for second and third year residents is likely to be negative.

The findings of the empirical studies indicate that there are likely to be "indirect costs of graduate medical education" in the outpatient setting. Many researchers found that nursing costs, space and/or the use of ancillary services were higher in settings where residents practiced. In no study was the use of these services found to be lower in settings where residents practiced.

What Is The Financial Impact Of Training Programs In Primary Care?

The discussions above examined the "net cost" of training in primary care in clinical ambulatory settings. However, that cost, is only part of the cost of primary care training programs. In this section we look at a broader question: what is the effect of the training program in primary care on the financial status of the overall institution; i.e. what is the difference between the costs incurred and the revenues received because there is a program in primary care. (Occasionally some writers refer to this as the cost of the program.) To answer these questions, we need to look at the components of costs and revenues in more detail.

The costs of a training program are the additional costs which are incurred as a result of the program. In many cases the primary care training program is responsible for the management of the postgraduate educational experience for those residents who have selected primary care. In this case the costs of the program can be classified into three groups: the costs of providing the services which are generated in the clinical setting in which the training in primary care is taking place, the administrative costs of running the training program; and the costs that are incurred when the primary care residents rotate through other outpatient services (such as dermatology, gynecology, psychiatry and orthopedics), the emergency room and inpatient services. Each of these cost categories is discussed briefly below.

Training in an ambulatory care setting is an integral part of all training programs with a focus on primary care. In general this training is designed to train residents to provide continuous, coordinated and comprehensive care. To accomplish these goals, continuity clinics are established in which the residents assume primary responsibility for a panel of patients over their training period. Sometimes special ambulatory clinics are established for this purpose or the

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residents are introduced into already existing practice settings. The costs of the services provided include the costs of the faculty and residents assigned to the clinic, and the other costs which are incurred as a result of providing those visits. Clinic costs (and costs per visit) will depend upon the efficiency with which the clinic is operated as well as the flow of patients through the clinic. As a result of visits to the clinic, diagnostic tests will be ordered and hospital admissions will be generated. If these patients would not have had the these tests or would not have been admitted to the hospital, had not the clinic been present, then the costs of these services should be attributed to the program. However, if the patients would have been cared for in another part of the provider organization, only the incremental costs (i.e. the indirect costs) should be attributed to the program.

Program Management: Resources are needed to manage a training program in primary care. In general, the program coordinates the rotations through the other services. The program may also be responsible for some faculty salaries which are not directly allocated to the primary care clinical setting. Finally the program is usually responsible for the full salary of the residents. (It will be noted that in the studies discussed above, only a proportion of the resident's salary were allocated to the clinic costs - a proportion that reflected the proportion of time they spent there.)

Costs of the Subspecialty Training: There may be increased costs incurred at the hospital level or in other ambulatory clinics where the primary care residents are being trained. In these other clinics, regardless of their residency year, the residents are likely to act more like first year residents; that is, their productivity will be relatively low and they will need a fair amount of faculty supervision. These costs would include the "indirect costs" attributed to these residents in these settings.

Other Costs: There are some other costs that should be considered in determining the cost of expanding outpatient training. As programs increase the amount of time that residents are being trained in the outpatient settings, it necessarily follows that the amount of time they spend in the inpatient setting necessarily decreases. As the residents were providing patient care services in the inpatient setting, some arrangements will have to be made to replace them. These arrangements can include hiring of salaried physicians, more nurses or physician assistants of increased visits by the community physicians. The effect on the cost of inpatient care will depend on the relative cost of the substitute providers and their relative productivity.

Income: As a result of the training program, there will be some revenues that the institution would not have otherwise had. There are many different types of revenues.

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Practice Revenues: The most important revenues are those received from the patient visits that are provided in the primary care ambulatory clinic. These revenues will depend upon a number of factors including: the number of patients seen, the level of charges, the insurance coverage of the patient population treated and the collection ratio. In addition to the revenues received from providing visits, the hospitals will receive revenues from the ancillary tests provided to the clinic patients as well as from any hospital admissions. (If the training is taking place in a fee for service setting, then hospitals will receive additional revenues from ancillary tests order on outpatients. If the training is taking place in a capitated setting, the hospital will not receive additional payments.)

Other Program Revenues: These include grants from the federal and state governments as well as foundations.

Other Hospital Revenues: In addition to the revenues that the hospital receives because of the increased testing and patient admissions directly attributed to the presence of primary care clinic, the hospital may receive revenues because of services provided by these residents when they are being trained on other services. The hospital may also receive income because it is the setting for a training program; i.e. the Medicare payments for the direct costs of graduate education and the add on to the DRG payments to pay for the "indirect costs of graduate medical education.

It is very complicated to trace the flow of costs and revenues resulting from the implementation of a training program in primary care. Most of the studies which examine the financial impact of a training program, are interested in only a subset of these revenues and costs. In general, they are interested in the extent to which revenues from patient visits provided in the primary care clinics cover the costs of the training program for which the program is responsible. No study has examined the costs and revenues attributed to the primary care residents when they are being trained in settings other than the primary care practice clinic. Nor has any study addressed the question of the cost of replacing services that were previously provided by residents when more of their training took place in the inpatient units. Below we discuss studies which have examined the financial impact of three different types of programs: a training program in primary care, residency programs in family practice, and general internal medicine ambulatory practices in teaching hospitals.

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Net Revenues from a Program in Primary Practice

Stern et al (1977) estimated the financial requirements needed to establish an educational program in primary care where the residents received their training in primary care at one of four different sites (two fee-for-service clinics and two prepaid plans). Costs examined included the costs associated with the clinic visits provided by the residents, the residents' salaries, the cost of staff teaching hours and the cost of managing the program - coordinating subspecialty rotations, etc. All of the residents' salaries were attributed to the program. The patient revenues associated with the services provided by the residents were estimated. (The investigators did not estimate "net revenues" associated with the ancillary services and hospital admissions that resulted from the clinic visits or with the activities of the residents during their time away from the primary care practice).

The investigators found that the payments received for the services rendered by the residents covered approximately 77 percent of the cost of the program. They simulated the financial effect of increasing visit charges, collection rates or the number of patients seen in the clinics. However, they found that, with current practice volume, charges or collection rates would have to double if the program were to break even - an unrealistic goal. They argued that both patient care and residency training would suffer if visits were increased enough to make the program break even.

It is not surprising that practice revenues do not cover the cost of the primary care training program. The program is responsible for 100 percent of the residents' salary, yet the residents spend considerably less than 50 percent of their time in the primary care clinic; the rest of the time was spent on other speciality outpatient clinics and in inpatient rotations.

Programs in Family Practice

There have been many studies of single family practice residency programs as well as surveys of multiple programs. These surveys usually ask for information on both the costs of the residency programs as well revenues sources. Program costs include the salary of the faculty members, residents, and other nonacademic personnel as well as the costs of operating the clinic which is the site of the outpatient training. (The costs will depend in part on how the hospital or sponsoring institution allocates its overhead costs to the primary care center). Program revenues include revenues from seeing patients in the residency clinics,

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the income the faculty receive as attendings when family practice patients are hospitalized as well as income from foundation grants, state allocations, federal grants as well as contributions from the sponsoring institutions.

In 1982 Ciriacy et al. surveyed a national sample of family practice residency programs asking about program costs and revenues. They found that, on average, patient income covered 31 percent of the total costs of the programs. In 1984, Ramsay conducted a national survey of family practice residency programs. He too found that that patient revenues accounted for 31 percent of the costs of the program. (In both surveys there usable response rate was about 50 percent).

The proportion of program costs covered by revenues from the family practice clinics appears to be low. Three explanations have been offered: (1) The volume of patients seen is small. Ramsay believes that the number of patients could be increased by about 30 percent without impairing either patient care or residency training (in fact it could even enhance training). If the patient volume met his suggested targets (see Table 3), then practice revenues would cover about 45 percent of the program costs. (2) Collection rates are lower than necessary. (3) Fees may be set too low. However, the fees charged at these clinics have to be competitive with fees charged for visits in the clinic's market area. Since insurance coverage for outpatient services is much less generous than it is for inpatient coverage, clinic prices cannot be much higher than those at private physician offices.

General Internal Medicine Ambulatory Practices in Teaching Hospitals

In 1980 the Robert Wood Johnson Foundation sponsored a program to develop general internal medicine primary care practices in 15 teaching hospitals. These practices were established to deliver primary care and to train residents. In theory, they were to replace the old clinic practices and to emphasize continuity in care, and to be a setting in which residents were trained in the behavioral and social aspects of being a primary provider. These practices were established in low income areas.

Kosecoff et al. (1987) and Brook et al. (1987) evaluated the demonstration sites. They looked at the cost of teaching, the efficiency with which care was provided and the financial impact of the ambulatory practices on the sponsoring hospitals. (They were not not interested in the financial impact of establishing a training program in primary care but rather on the financial impact of establishing ambulatory practices which served low income populations and in which residents would be trained in primary care).

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Table 3 Visit Targets for the Residency Sessions

Level	Session/wk	Pts/Session		Pts/wk		# wks	Total
1	1	5		5		48	240
2	3	10		30		48	1,440
3	4	12		48		48	2,304
TOTAL	8	27		83		48	3,984
Average visit/resident		3,648/4 = 1,328					
Expected income per resident		1,328	×	$27.06*	=		$35,936
Actual income per resident		1,015	×	$27.06	=		$27,464
Difference per resident							$ 8,472

* Income per visit derived from study data.

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The investigators found that the revenues associated with these practices exceeded the costs the hospitals incurred in operating them. Defined revenues include not only revenues received for the visits but also revenues received from ancillary tests as well as any resulting hospital admissions. However, depending upon the assumptions that were made about staffing patterns, practice revenues (revenues from the services directly provided by the residents and faculty members) did not always cover practice costs.

In general, the researchers found that the practices were managed very inefficiently; that staff time was not well utilized, that patient scheduling was poor and that the use of space was inefficient.

Summary

The implementation of a training program in primary care is accompanied with a complicated flow of costs and revenues throughout the sponsoring institutions. No study has tried to trace these flows in their entirety, but each study has focused on a few of them. In general, patient care revenues which are received as a result of the provision of services in the primary care practices will cover the costs of those practices, if the practices are allocated only a proportion of the residents and faculty members costs - a proportion that reflects the time they spend in the clinics. Clinic revenues, however, are not sufficient to cover the full cost of the residents' salary and the salary of the faculty and administrative staff who are directly the responsibility of the program. The practices associated with the training program may be a new source of patients to the sponsoring hospitals. In this case, the hospital may make profits off the ancillary services and admissions that result from the program. Other benefits and costs of which are a consequences of these training programs have not been measured.

Discussion: Other Issues

Issues touched on too briefly above include: the efficiency of the training process; some of the differences between training in the inpatient and the outpatient setting; the level of efficiency in the production of ambulatory services in teaching settings, and some of the differences between training in an HMO and a fee for service setting.

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The Efficiency of the Training Process

There were only a few studies which systematically examined the way that physicians were being trained. Most of these studies described the structure of the training programs, rather than indicate what actually happened in the residency settings (Goodson et al., 1986).

The quality of the training received in the primary care clinic will depend in part on the amount of faculty input as well as the volume of patients that are seen. Figures Three and Four below display some hypothetical relationships between resident "learning" and faculty input and patient flow. Since faculty input and patient flow are the two variables that influence the cost of training, it would be useful to know something about actual quantitative relationships depicted in these figures. The importance of this knowledge is underlined by the fact that faculty member input is the most important factor influencing the cost of care provided by residents (and medical students) and because the studies discussed above indicate that there is wide variation in the amount of faculty time actually given to training in the outpatient setting.

There is also very little known about the level of training required of the physician "trainer". In the inpatient setting, the resident is both a student and a teacher. Residents spent some proportion of their time training medical students (Institute of Medicine, 1976). However, at least as reported in the published literature, the teaching role of the resident seems to be nonexistent in the ambulatory setting. This points to the question: What is the role of the resident, particularly the third year resident, as teacher in the ambulatory setting.

It is important to determine ways of decreasing the costs of training - particularly for medical students and junior residents. Educators have suggested the use of professional patients, computers, and simulations. Shueser et al (1985) describe an interesting use of the video in training medical students in the emergency room.

The Patient's Role

The patient, a necessary ingredient in the training process, is different in the inpatient than in the outpatient setting. In the inpatient setting the patient is usually in bed. Consequently, rounds can be organized solely for the convenience of the physicians. House staff can interact with the patient when they want to. Patients rarely refuse to answer yet another resident or student asking the same set of questions or being examined more than once. In the outpatient setting,

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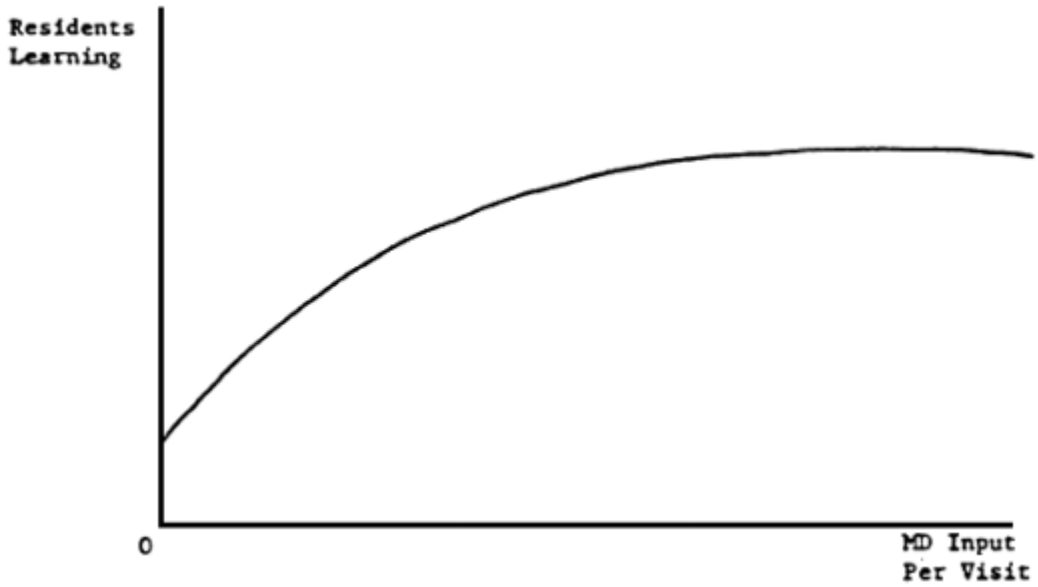

Figure Three

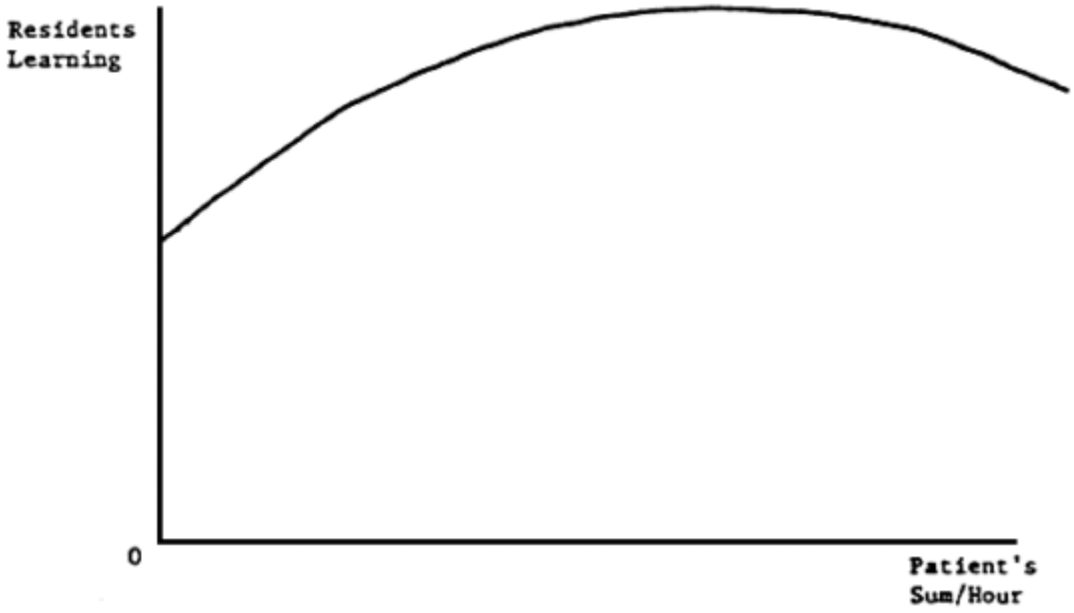

Figure Four

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however, patients may be less willing to donate their time to the educational process. This setting requires coordination of the activities of the residents and the attendings. It also means that the number of residents (and medical students) who can learn from a given patient is limited.

Secondly, patients in the outpatient setting are more likely to want a doctor who is fully trained rather than one who is still being trained. Although in the inpatient setting people of all social and economic backgrounds are used to interacting with the house staff, many patients have "their own doctor". However, in the outpatient setting, one physician (either resident or FT physician) becomes the patient's primary doctor. Many people, particularly in the higher social economic groups, may be unwilling to be assigned to the resident's panel of patients. This problem will be exacerbated in establishing a panel of patients for the first year residents.

Thirdly, in the outpatient setting patients are more mobile. With the increasing supply of physicians, people have more choices. This means that the University based practices have to be competitive with community physicians in order to get patients. However, this may exacerbate town and gown relationships (Medical News, 1989).

These observations lead to the conclusion that the socio-economic background of people in the residency practices will be different from those seen by the faculty in their private practices. This difference means that that patients in the residency clinics are less likely to have health insurance coverage. If the patients are insured, they are more likely to be covered by less generous insurance programs such as Medicaid.

The Efficiency with Which the Practice is Operated

Almost all studies which compared the cost of treating people in the outpatient clinics as opposed to private physician offices have found the costs in the former to be higher (Lion et al., 1985). Kosecoff et al. in their evaluation of the ambulatory practices supported by the Robert Wood Johnson Foundation found that the practices were very inefficiently run. They found that there were problems with patient scheduling and scheduling of physicians. Once in the office, patients waited longer to see the physician than they do in the offices of community physicians. Some of these problems may be due to the differences between the types of patients seen in these practices compared to those in private physicians offices. For example, Kosecoff found that the no show rate was much higher than that in private physician offices. A high no-show rate makes it particularly difficult to schedule appointments. It may be possible to reduce the

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no-show rate but it is possible that it is related to the socio-economic characteristics of the patient population.

These observations lead to the conclusion that it will be very important to pay attention to the efficiency with which the primary practice clinics are managed.

Training in the Health Maintenance Organization

There is increasing interest (Isaacs and Madoff, 1984) in using the health maintenance organization as training sites. In both HMOs and other settings the training of medical students and junior residents will add to the cost of care. There is, however, one difference between the implications of training in the two sites. We noted above that there were two sources of "indirect costs of graduate medical education" in the ambulatory setting: one is the higher (nonphysician costs) of residents visits (we noted that there were data suggesting that nursing costs and space may be higher); the second is increased ancillary testing and perhaps increased admissions. In both the fee for service sector and the HMO there is no increased revenue to offset the first type of increased costs; however, in the fee for service setting there is increased revenue to offset those indirect costs whereas in the health maintenance organization there is not.

Conclusions

There are many different ways of looking at the question of the cost of training medical students and residents in the outpatient setting. A number of analysts have been interested in the net cost of education in the ambulatory setting where net cost is defined as the difference in the cost of producing a given number of patient visits by residents who are also being trained and by full time physicians. The net cost was found to depend upon a number of factors including: the flow of patients through the clinics, the faculty members' input into the resident's practice and the relative salaries received by the resident and the FT physician. In general, we found that if the outpatient settings are allocated a proportion of the resident's salary (that proportion that they spend at the clinic), then the net cost of graduate education is negative for second and third years residents, and positive for some of the first year students. This finding, however, was not universal. This conclusion needs to be accompanied by a caveat. While the net cost of training in the primary care clinic may be negative for a second and third year resident, it does not follow that the net cost of training second and

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third year residents is negative. These residents spend time in subspecialty clinics such as orthopedics, dermatology and gynecology where their productivity level is not as high as it is in the primary care clinic.

Most, but again not all, studies found that there were indirect costs of graduate medical education in the outpatient setting. Most of this work has concentrated on the indirect costs associated with the provision of patient visits (space, time and ancillary personnel). There needs to be more work done on examining resident practice as it relates to the ordering or tests and to hospital admission decisions.

The income generated by primary care practices is not sufficient to cover the cost of the primary care training program where the training programs is responsible for the resident's full salary. The main reason for this discrepancy is that the residents spend significantly less than 50 percent of their time in the primary care clinics.

There is some evidence that the primary care clinics are not efficiently run. There also is some evidence that a number of clinics - particularly those that are part of residency programs in family practice programs do not have as many patient visits as they would like. It is not clear whether the shortage of patients is due general competition from private physicians or because of certain attributes of the clinics per se.

It is reasonable to conjecture that the insurance coverage of patients being seen at the primary care clinics will be less complete that that of patients seen at the faculty physicians private practice of by community physicians.

More needs to be known about the training process. Training in the outpatient setting is probably more costly than it is in the inpatient setting. Not only is more training done by attendings rather than residents, but also there appears to be a higher attending/resident ratio. In the studies that were examined, there was considerable variation in the amount of faculty time that was provided to the resident in the clinic setting. Since faculty time is very expensive, research on the training process per se would seem to be called for.

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FINANCING OF MEDICAL AND GRADUATE MEDICAL EDUCATION EDUCATION: ISSUES IN PRIMARY CARE EDUCATION SUPPORT*

Ruth S. Hanft, Ph.D.
Research Professor and Consultant
George Washington University

Introduction

The financing of graduate medical education is complex and evolved pragmatically with the historic development of teaching hospitals and patient care financing. For almost all of this century, medical and graduate medical education clinical instruction has been concentrated in the hospital setting. Graduate and undergraduate medical education are intertwined because of the jointness of clinical activities of faculty/ residents and M.D. students.

Although the medical school, as an institution, is the focus of undergraduate medical education, graduate medical education organizationally evolved as hospital, program/specialty based education. It is only in recent years that the majority of programs are affiliated with a medical school but control remains decentralized on a departmental or program basis and the accreditation processes are separated for undergraduate and graduate education.

While there are data on the sources of revenue that support medical schools and their faculty, and sources of data on support of hospitals, there are no comprehensive data on the funding streams for medical and graduate medical education that: allow disaggregation by discipline/specialty; separate the funds flow between undergraduate and graduate medical education; and separate inpatient and ambulatory care financing. Many of the funding sources are fungible and their specific use is departmental or hospital specific. There have been special one-time studies, cited later, that provide some fragmentary data on primary care education financing, particularly family medicine graduate programs and ambulatory care training.

* I would like to thank Catherine White for her ongoing assistance; Lawrence Clare for assistance on federal funding of primary care; and Jessica Townsend for her helpful comments.

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The discussion that follows provides:

- A brief history of financing medical and graduate medical education
- A discussion of the general federal support streams
- Role of the states
- Discussion of primary care and ambulatory care education financing
- Potential sources of support for primary care and ambulatory care education

History of Support

Until the development of a variety of federal programs that indirectly and directly support medical education, didactic and clinical undergraduate medical education was supported similarly to other higher education through state appropriations for public institutions, tuition and endowments. Public and private medical schools continue to have different mixes of sources of support. Graduate medical education and clinical faculty were supported by hospitals and fees generated by faculty from provision of patient care services to private patients. The majority of clinical education was conducted in hospitals with indigent patients until the advent of Medicare and Medicaid and since that time large programs continue to be concentrated in public hospitals and/or hospitals with large indigent caseloads (Hanft, unpublished). As late as 1955, residents had virtually no responsibility for the day-to-day management of private patients of moderate means and even less contact with patients on the hospitals' "gold coast" (Rabkin, 1960).

Prior to World War II, medical schools relied on a small full-time faculty, mainly in the basic sciences, and a "volunteer" or geographic full-time clinical faculty which received no compensation or modest stipends from the school and/or hospital with the quid pro quo being the prestige of the affiliation with a medical school and/or teaching hospital and admission privileges for private patients at a teaching hospital. Residents and interns were provided with meals, housing and sometimes small stipends.

Medicine started developing a scientific base about 1890 and medical schools and some hospitals began to evolve into research institutions with the institutions receiving funds from individuals, foundations and state appropriations (Dietrick and Berson, 1953). The Ransdell Act of 1930, created the National Institutes of Health (Mider, 1976). The National Cancer Institute was established in 1937 (IOM, 1976; Hanft, 1984). World War II marked a turning point with substantial federal investment in biomedical research funding. This funding became a major

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source of indirect support for medical schools and their faculty with the clinical research focused in the teaching hospital.

In 1945, at the end of World War II, President Truman explicated his views of the deficiencies in health and medicine. Among the recommendations were federal support of medical education and biomedical research. In 1947, the President's Scientific Research Board recommended a substantial increase in federal funds for medical research and medical education (Bardley and Harvey, 1976).

Though the AMA opposed federal support for education, financing of health care services and expansion of social insurance to health care, it did not oppose funding of biomedical research. Biomedical research funding became a major source of revenue for the development of medical schools and the expansion of faculty with clinical faculty involved in graduate medical education as well as undergraduate education. NIH grants awarded for the conduct of research and research training included funds for salaries of faculty who conducted research and also spent time in teaching. These funds enabled the schools to expand the numbers of full-time faculty (Relman, 1984). By 1955, one third of medical school revenues were derived from research grants and contracts (Stevens, 1971; JAMA, 1987).

Direct federal support for education did not emerge until the 1960s, although throughout the fifties numerous individuals and commissions expressed concern about the slow increase in the number of medical students. Federal direct support for schools and undergraduate medical education began in 1963, in anticipation of the increased utilization of services that would result from the expansion of private insurance and the enactment of health insurance for the elderly (Stevens, 1971; Hanft, 1982; Relman, 1984). This support was relatively brief.

Patient care funding began to increase with the growth of private health insurance in two ways. Hospitals incorporated education costs into their charges, and for a growing number of middle class patients, insurance covered physicians' fees. Teaching programs, however, continued to rely principally on indigent patients until the advent of Medicare and Medicaid (Relman, 1984; Stevens, 1971). A recent study shows a continued strong link between graduate medical education and indigent care (Hanft unpublished).

Today support for graduate and undergraduate medical education comes from a multiplicity of sources. Although data are available on medical school support and some data are available on resident support, there are only very gross estimates of hospital support, mainly Medicare estimates. There are no national

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estimates on support for outpatient education. There is no way to separate precisely medical school support by graduate and undergraduate training except through special case studies.

Although sources of financing are similar for undergraduate and graduate training, the proportion contributed by each revenue source differs for each type of education. In the undergraduate years biomedical research, state appropriations and practice plan revenues dominate the financing of medical schools. During residency years patient care funds from both hospital and faculty practice plan revenues dominate, paying an estimated 80 percent or more of the total costs of graduate medical education, with the majority of funds from hospital revenues.

Table 1 shows trends in revenues; Table 2 shows sources of revenue for public and private medical schools.

As Table 1 shows, the fastest growing source of revenues for medical schools are medical practice plans. Much of this revenue is generated from the joint teaching/patient care activities of graduate medical education. These revenues have risen rapidly as a proportion of total medical school revenues. Federal revenues, other than research, have declined substantially and revenues from research have also declined as a proportion of total revenues, although they constitute the second largest source of support.

Table 2 shows the most recent published data by ownership of medical schools. In reviewing the data, it should be noted that almost 60 percent of the schools are public schools. Ownership is a key factor in the distribution of revenues, with almost 30 percent of public school revenues derived from state and local government. Private schools are more heavily dependent on professional fee income. Payment from hospitals account for one-fifth of revenues and professional fee income for another fifth or a combined total of 43 percent. In contrast, public universities derive less than 8 percent of their revenue from hospital payments and a slightly smaller amount than private schools from professional fees. However, the difference in hospital payments may be an artifact of the way states provide funds to their medical schools and teaching hospitals. For example, where the state owns its own teaching hospital, the full faculty salary may be paid directly to the medical school through the appropriation to the school rather than passing the supervisory salary through the hospital books, or the hospital may pay the department with the revenues reported as practice plan revenues.

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Table 1 Trends in U.S. Medical School Revenues Selected Years 1971–1987

	1970–1971	1975–1976	1986–1987
Revenue Source	Percent	Percent	Percent
Federal research	25.6	24.3	19.9
Other federal	18.8	11.7	3.8
State and local government	18.9	23.8	18.5
Tuition and fees	3.7	4.6	5.3
Medical service	12.2	18.0	37.6
Other income	20.9	17.6	14.8
Total*	100.0	100.0	100.0

* Totals may not add due to rounding.
Source: "Medical Education in the United States, 1986–87" Journal of the American Medical Association, August 26, 1988, Vol. 260, No. 8, Table 4, p 1080

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Table 2 Revenues of Public and Private Schools by Source of Funds, 1986–1987

	Percent Distribution	
Source of Funds	Public	Private
State and local government	29.7	2.2
Professional fee income	19.4	22.5
Recovery of indirect costs	5.0	8.3
Tuition and fees	3.2	7.6
Endowment	0.2	2.3
Gifts	0.2	1.2
Income from college services	1.7	0.8
General university funds	2.4	1.0
Reimbursement from hospitals	7.8	21.2
Research and teaching training	1.5	1.1
Sponsored programs*	25.9	29.0
Miscellaneous	2.9	2.7
Total **	100.0	100.0

* Mainly biomedical research.
** Totals may not add due to rounding.
Source: Same as above - Table 9 p. 1083.

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It is important to note that these tables represent averages and there is wide variation among medical schools as to source and mix of revenues. The mixes of revenues depend not merely on public or private ownership, but factors including: university ownership of the teaching hospital; the types of teaching hospitals affiliated with the medical school; the patient payor base for generation of fees; the research emphasis of the school.

Comparable aggregate data are not available for teaching hospitals, undergraduate medical education separated from other missions or for graduate medical education separated from other missions.

Federal Support*

Biomedical Research

Federal direct investment in support of medical education began in the early sixties but indirect support from biomedical research was in place. Biomedical research funding, predominantly from the National Institutes of Health, began to grow rapidly after World War II, and provided a base of indirect support for medical schools, particularly for undergraduate medical education. While biomedical research funds are granted for the conduct of biomedical research, these funds also support faculty salaries and graduate fellowships. This support enabled medical schools to expand the size and expertise of their faculty and led indirectly to the further development of technology, the demand for specialist training and the consequent specialization of the delivery of medical care in the United States. The combination of an increasing reliance on federal support for research and the opposition by the American Medical Association to direct federal involvement in the support of education, led to the domination of biomedical research and research/specialty oriented faculty in medical education over a twenty year period from the 1940s to the 1960s. The influence of the domination of this support ran and runs counter to the public goals of increasing the supply of primary care physicians relative to other specialties. State appropriation support of public schools and more recently patient care funding have tended to counterbalance the research domination, as did the direct federal capitation payments (support per student) in the 1970s (Hanft, 1982).

* Drawn extensively from R. Hanft "Impact of Changes in Federal Policy on Academic Health Centers Health Affairs Vol 1 No,. 4 Fall 1982:67–81.

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Though biomedical research funds are still a major source of revenue for medical schools, they have declined as a proportion of total revenues since the 1960s. However, the proportion of these revenues to total revenues varies substantially by institution with some institutions receiving much higher than the average revenues from this source and some schools deriving little revenue from this source.

Education Support

In the late 1950s and early 1960s, increased availability of health insurance stimulated public demand for health care services. In addition, there was a public perception of a shortage of health professionals. Efforts to provide hospital insurance for the elderly and increased federal involvement in the care of the indigent elderly through the Kerr-Mills Act contributed to growing public and congressional fears that the increased demand for services could not be met due to a shortage of health professionals. Although some private and public commission reports urged federal support for health professions education, organized medicine stood firm in its opposition to such support until the early 1960s.

In 1963, at the onset of the "Great Society" programs, the Health Profession Education Assistance Act was passed (P.L. 88–129). It provided for matching grants to assist in the construction of teaching facilities for schools of medicine, dentistry, osteopathy, public health, optometry, pharmacy, podiatry and nursing (Health Resources Administration, 1980). The Act was the start of a stream of legislation which enlarged the federal direct commitment to health professional education and culminated in the 1971 Comprehensive Health Manpower Training Act (P.L. 92–157) and the Nurse Training Act (P.L. 92–158). These laws provided a new type of support for health professions schools - "capitation" - which was based on the number of students enrolled in health professions programs. Although the manpower legislation continued to require the expansion of enrollment until 1980, during this later period the emphasis was on issues of geographic and specialty distribution of physicians rather than on gross numbers (Health Research Administration, 1980).

By 1974, disagreements over the need for capitation support developed. The executive branch was concerned about a potential surplus of physicians, while Congress was concerned about geographic shortages of personnel and specialty distribution. In fiscal year 1980, the capitation support level for medicine was reduced to less than one half the 1972 amount, and in fiscal year 1982 it was completely eliminated. Special grants were included from the early 70s to spur the development of family practice programs and beginning in the late 70s to support primary care residencies in medicine and pediatrics. These special grants

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continue at very modest levels and include support for family medicine, general internal medicine, pediatrics and geriatrics. Grants for family medicine residency programs began in 1972. These programs grew from 117 to 381 in allopathic medicine. About 45 percent of these programs received federal support between 1972 and 1988 and in 1988 total federal grants were 20.3 million dollars (Health Resources and Services Administration, 1988). Grants for general internal medicine and general pediatrics began in 1977 and currently are funded at about 13 million dollars.

During the 1970s there were changes in support from the Veterans Administration (VA) and the Department of Defense (DOD) including: Veterans Administration support to increase enrollment and to improve the quality of instruction in existing medical schools; the development of new "Veterans Administration" medical schools; and the creation of a federal medical school to train physicians for the uniformed services. The VA began to develop affiliations with medical schools in 1946 under legislation whose goal was the improvement of the quality of care in VA hospitals and clinics. Medical school faculty and residents have been provided salary support through these arrangements since that time. The Veterans Administration Medical School Assistance and Training Act of 1972 (P.L. 92-541) enabled the VA to assist in the establishment of new state medical schools to be operated in conjunction with and located near VA hospitals, and the expansion of existing schools. Five new schools were developed and the first students were enrolled in 1977 and 1978 (Health Resources Administration, 1980). Despite the direct educational support provided by the federal government, biomedical research and patient care dollars continued to provide higher proportions of financial support to institutions during this period.

Budget proposals from the Administration since 1981, have tried to terminate all direct education support for health professions schools except the support of faculty and residents provided through the VA deans' committee arrangements and the funding of the Uniformed Services Medical School and military residencies. About 12 percent of the residencies are supported through these programs. The Congress however, has repeatedly rejected termination of grant support for primary care and family medicine education.

Patient Care Support

Patient care activities are an integral part of the educational process. Prior to the 1960s, clinical instruction was supported primarily through small stipends from the hospitals for support of residents and interns (Stevens, 1971; Relman, 1984). Full time clinical faculty were supported by tuition and state and county appropriations to state universities and their hospitals and salaries from

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county hospitals. Volunteer and part-time faculty found their support through private practice earnings. Most joint patient care/teaching activities centered on indigent patients and were conducted in federal, county, municipal, university, and philanthropically supported hospitals (Rabkin, 1960).

With the advent of Medicare and Medicaid and the rapid growth of private insurance, new sources of funding became available for support of clinical training. This support took two forms: additional salary support of residents and supervisory teaching physicians in hospitals, and support for patient care services to individuals newly covered by public or private insurance. These new sources of revenue enabled teaching hospitals to expand their residency programs, increase substantially the stipends paid to residents, pay faculty for supervision of residents, and allowed these programs to keep pace with the expansion of undergraduate medical school programs. In fact, the number of residency positions have exceeded the number of medical school graduates for several decades. In addition, these funds provided an additional stream of support for schools and faculty, allowing for continuing rapid expansion of clinical faculty.

Teaching physicians who heretofore had provided individual patient care service for indigent patients without reimbursement were now able to bill fees for these services, for those covered by Medicare and Medicaid. Many medical schools and their individual departments and divisions developed or expanded organized "practice plans" for collection and disbursement of these fees. This source of income has grown rapidly since the early 1970s (Hanft, 1982; JAMA, 1988). The amount of revenue generated from faculty practice plans varies widely among institutions, depending on many factors, including the payment sources for patients' care, the structure of the practice plans. The plans now account for more than 19.4 percent of the gross revenue of public schools and almost 22.5 percent of private schools' revenue. Hospital payments in addition, amount to 7.8 and 21.2 percent respectively (see Table 2). It should be noted that not all practice plan revenues flow through the medical schools and the amounts reported in the literature are understated. These revenues are usually distributed by the practice plan, after expenses are paid, to faculty in the form of salary supplements and fringe benefits. Depending on the structure and charter of the plan, some of these funds are also used by the department for recruitment, travel, seed money for research and development, support of fellows and in a few instances, for support of residents It should be noted that many plans provide a percentage of gross or net revenues to the dean/vice president, which can be used for a variety of purposes.

With the increased flow of third party payments, in the 1970s, issues relating to both geographic location and types of specialty training began to arise, as well as issues of the "fairness" of financing. Specifically, reimbursement from

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third party payors for inpatient services has financed a greater proportion of the costs and charges than for outpatient services. Until recent changes designed to reduce health insurance costs, private hospital insurance rarely required cost sharing by the consumer. In contrast, reimbursement for outpatient services from third parties is usually structured to include deductibles (payment by the patient before the third party will pay) and coinsurance (a percentage of the bill paid for by the patient) and does not cover preventive services. It is therefore easier to support specialty training oriented toward inpatient specialties and inpatient care than primary care specialties oriented toward outpatient training (IOM, 1976; GMENAC, 1980).

Additionally, the usual and customary fees billed by physicians and paid by public and private insurance programs tend to reward procedure oriented practice at a higher rate than cognitive activities. Specialties such as surgery and radiology are able to generate much larger revenues than pediatrics. A number of commentators: the Institute of Medicine (IOM, 1976), the Health Care Financing Administration's Office of Research, Demonstration and Statistics (HSAIO and Stason, 1979) and the Graduate Medical Education National Advisory Committee (GMENAC, 1980) and the Council on Graduate Medical Education (COGME, 1988) report that these sources of revenue have contributed greatly to the emphasis on specialty and subspecialty training in medicine. The recent study for the Physician Payment Assessment Commission, has recommended a new structure for physician payments that would increase fees for primary care and cognitive activities and reduce fees for surgery and other procedures (Hsaio, 1988). The fee structures and the sites of care clearly influence the amount of practice plan revenue different departments of a medical school can generate.

Financing of education through third party payments has different economic burdens and benefits than financing through general revenues of government. The benefits and burdens also fall in geographically uneven patterns since the location of graduate medical education programs is not related to per capita population in a state nor to the number of undergraduate medical student positions within a state.

Private health insurance premiums are fixed dollar contributions based on the health care experience of the particular group. Small employer groups, and high risk industries pay higher premiums than large, young, white collar groups. Employers can deduct the full cost of their contributions from their gross income for tax purposes. Large industry, particularly unionized industry, tends to have more comprehensive health insurance coverage than small or low wage industry. The overall effect is regressive with smaller/low wage industry paying higher prices for the same insurance and potentially a higher subsidy for graduate medical education. This factor, however, is counterbalanced to some extent by

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Medicare, Medicaid, VA support and state and local appropriations for the support of public hospitals.

In the case of Medicare, Part A hospital insurance which pays for the stipends of residents and some salaries of teaching physicians, is financed by the payroll tax, a tax considered regressive. Part B, which pays the fees of teaching physicians for providing patient care services, is financed by a flat premium, unrelated to income, paid by the elderly and disabled beneficiaries of Social Security which covers approximately 25 percent of the cost, plus federal general revenues which accounts for about 75 percent of the cost (Fruen and Korper, 1981; Lave, 1984; IOM, 1976; Lundy, 1984). The recent enactment of the Medicare, catastrophic benefits adds a progressive tax for the catastrophic provisions for both Part A and Part B.

Medicare Part A pays for graduate medical education through a complex methodology that recognizes direct costs and provides an indirect education adjustment. The indirect education adjustment was designed for multiple purposes beyond education in recognition of the lack of information as to why hospital costs were higher in teaching than non-teaching hospitals and to adjust for the problems of measuring clinical severity as between patients in teaching and non-teaching hospitals.

Currently, direct costs, which are calculated by the historic costs per resident in a base year and trended forward by a cost of living escalator, multiplied by the number of FTE residents, are passed through as an addition to the DRG payment. There is a limit on the payment of full costs. Full costs are paid for residents up to first certification or five years, whichever is higher. Recent changes allow residents who receive salaries from the hospital but are located in outpatient settings, to be included in the FTE count.

The indirect adjustment increases the DRG payment through a curvilinear formula based on resident to bed ratios. The percentage has been decreased from 11.7 percent in the initial year of the payment of this adjustment to 7.7 percent (P.L. 99-272, 1986). The President's 1990 budget recommends a further reduction to 4 percent.

A relatively new adjustment has been added to DRG payments-"disproportionate share". Because of changes in Medicare and Medicaid reimbursement, the increase in discounting of hospital charges and negotiated rates by private third party payors, and the growth of the uninsured, hospitals who provide care for low income patients were recognized as unable to continue to meet the costs of caring for these patients by cost shifting from paying patients. Many of these hospitals are teaching hospitals and public general hospitals. To

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offset the changes that reduced the hospital's capability for absorbing the costs of indigent/uncompensated care, the Congress developed the concept of disproportionate share (Federal Register, 1986; PL 99–272, 1986). The formulas for determining which hospitals are eligible and the rate of adjustment include the following factors: 30 percent of the inpatient revenues is derived from state and local payments furnished to patients not covered by Medicare or Medicaid; a formula related to the number of patients who are eligible for Medicare Part A and Supplementary Security Income Payments and the number of patient days for those entitled to Medicaid but not Medicare Part A.

While disproportionate share payments are not directly related to graduate medical education, the financial status of a hospital clearly will influence its ability to support the costs of graduate medical education. A large number of residency programs are concentrated in disproportionate share hospitals with high volumes of outpatient visits (Hanft unpublished).

Medicaid is financed by a federal/state matching formula with the federal share in inverse relation to the per capita income of the state. The states have considerable discretion in setting hospital rates, including graduate medical education and teaching physicians payments. Most states include the direct cost of graduate medical education but not the indirect education adjustment. Physician fee payments in many state's Medicaid programs are also well below the usual, customary and reasonable charges of physicians affecting the revenues of practice plans which provide faculty support.

Role of the States

The states have played a major role in support of undergraduate and graduate medical education and have been primarily responsible for the expansion of the number of medical schools and for increased enrollment, as well as for the support of primary care residencies. Prior to 1960 there were 89 medical schools. In 1987, there were 127 and some have not yet achieved their initial enrollment goals even though nationally enrollment has declined slightly. Seventy-six of these schools are state owned or state related. Seventy-four receive appropriations from the state. Some states subsidize private schools also (JAMA, 1987). In 1987, state and local government support accounted for 18.5 percent of public and private medical school total revenue from all sources. For public medical schools, state appropriations amount to nearly 29.7 percent of their total revenue (Tables 1 and 2). States also provide support to state owned hospitals. This latter support generally falls into two categories that are not often separately identified: support of residents and support for indigent care. Some states deficit finance their

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hospitals. In addition, some states provide specific funds for training in family medicine and primary care residencies.

The reduction of federal funds to state governments with the end of general revenue sharing and reductions in funding for many social programs has led states to scrutinize increasingly, medical education and teaching hospital support. Competing priorities for state revenues, combined with the separation of Medicare and Medicaid reimbursement in 1982, are stimulating reevaluation of state support. State Medicaid programs no longer follow the Medicare reimbursement principles and many do not recognize indirect education costs. In addition, Medicaid reimbursement can be at rates below the costs of teaching hospitals, and Medicaid providers can be limited by competitive bidding (Schramm, 1983). State appropriations decreased from 23.8 to 18.5 percent of medical school revenues in 1986–87.

The Lewin Wisconsin study surveyed a number of states regarding state support for graduate medical education. For example, California in 1985–86, provided 40 percent of the support of resident stipends and fringe benefits at five University teaching hospitals. They provided operating subsidies to these hospitals. In addition, there is a special grant program for support of family medicine residencies. The state has required cuts in residencies.

Illinois supports the residency positions in its state University hospital but these funds are not earmarked. There is also support for residencies in primary care specialties. Indiana University hospitals receive no operating subsidies or payment for resident stipends. The state does subsidize residency programs in community hospitals. In addition, there is a special grant program for family practice residencies. Virginia provides a subsidy to its University hospitals for indigent care and supports family medicine residencies (Lewin 1986).

The states vary widely in how they support graduate medical education, their teaching hospitals and the degree of control they maintain over the number of residency positions in their own hospitals with some states, notably New York, attempting to control the total number of residencies.

State university hospitals are a major training base for residents, providing approximately 15 percent of all of the graduate medical education positions.

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Primary Care Residencies and Ambulatory Care Training

Historically, support of graduate medical education has come from hospital financing. While prior to the Flexner report preceptorships with individual physicians were a common method of training, the rise of the hospital and the concentration of technology in the hospital led to the focus of undergraduate clinical and graduate medical education in hospital settings (Rosenberg, 1987). Traditionally, hospitals incorporated education costs in their cost base and these costs were recognized during the implementation of Medicare. Blue Cross cost based plans also recognized these costs and hospitals incorporated these costs in charges to charge payors.

The evolution of the family medicine residency and the development of the community based medical schools in the 1960s and 1970s stimulated the initial interest in a change in focus of residencies from the traditional large teaching hospital to community based hospitals and ambulatory care settings. The advent of competition in the late 1970s and prospective payment, stimulated changes the nature of the hospital and the delivery of health care services and has led to increased pressures to expand education sites to ambulatory care settings. While most pronounced in the primary care specialties, ambulatory care training is an increasing need in specialties like ophthalmology, radiology, and general surgery.

The financing of graduate medical education however, has not changed accordingly, except for the recent Medicare change which recognizes the direct cost the hospitals pays when the resident is in an outpatient setting, including outpatient settings outside the hospital if the hospital is willing to support these costs.

There are no national data on financing of graduate medical education in ambulatory care settings. There are data on federal primary care grants and data can be aggregated from the states where there are appropriations for primary care residencies. Family medicine residences and faculty were funded by 32 states in 1985. In dollars in 1982, the total state funds were 54 million (Ricketts, DeFreize and Wilson 1986). There are fragmentary studies primarily in family medicine on sources of financing but not in total dollars.

Family medicine residencies are structured differently than other residencies. In general, the first year of education is based in a hospital with the financing from the hospital. In subsequent years the education takes place in an ambulatory care group setting with support from grants and fees for service generated by faculty and residents. Residents who are licensed can have their services billed for in these settings, although not in the hospital setting. On

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average, about thirty percent of the revenues come from fees from patient care (Ciriacy, 1985). Perkoff cites estimates of a maximum of one-third of the expenses of primary care education could be generated from patient fees (Perkoff, 1986).

Schroeder has noted that shifts in the site of training from the hospital to the ambulatory care setting are not followed by the revenues "Thus the medical school's designated sources for clinical teaching (tax supported state money for public) and some private schools ... tend to remain at the teaching hospital even while some of the teaching function shifts out of it..." (Schroeder, 1988 p. S12).

There are several generic problems in financing primary care residencies outside of the hospital setting. These problems may be of lesser magnitude in support of general surgery or other procedural specialties where patient charges tend to be substantially higher for services. The problems are summarized as follows:

— In the hospital setting the resident and supervisory physician are paid salaries from hospital revenues with education costs separately recognized by Medicare and Medicaid and historically included in hospital charges. If a personal and identifiable service is provided by the teaching physician, a fee can be charged to the patient or insurer. Residents may not bill fees.

— In the outpatient setting not linked to a hospital (for Medicare) and for outpatient settings in terms of other insurors, the resident's salary and a supervisory salary for the faculty must be generated from fees to the patient/third party or from grants from government and/or philanthropy. In the primary care specialties, the fee levels as noted extensively in the literature, are substantially lower than for procedure oriented specialties. While there are two sources of patient care support for hospital based or hospital outpatient linked training there is only one in the non-hospital ambulatory care setting. Payments for physicians services as distinguished from payments for hospital services, historically did not incorporate education costs since education was almost exclusively hospital based in allopathic medicine.

— The development of faculty practice plans has been on a departmental/specialty basis similar to the organization

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of residencies with the procedural specialties able to generate substantially higher revenues than primary care specialties, because of the Medicare and private insurance charge structure. The revenues of these plan flow to the department with some small percentage flowing to the institution. Conceptually, all education, both undergraduate and graduate medical education should be an institutional responsibility. The organization of medical schools on a departmental basis and graduate medical education on a specialty/program basis combined with the departmental flow of hospital and practice plan revenues leave the medical school institution with a paucity of flexible funds. Institutions that do not receive public appropriations, or where the appropriation is in the form of line items, unless the institutional percentage of practice plan revenue is substantial, have little ability to cross subsidize. While cross subsidies are endemic among the missions of a medical school, they do not operate on an institution wide basis in the medical schools for graduate medical education programs. High earning departments and specialties retain the majority of their practice earnings for departmental and even division rather than institution wide goals.

Graduate medical education programs for more than fifty years were focused in the hospital setting. With the development of third party payments, these payment systems incorporated the costs of education within the hospital at first implicity. With the enactment of Medicare graduate medical education, costs were explicitly recognized as allowable costs. Hospital reimbursement initially under Medicare was cost reimbursement. Physicians' services however, were and are, reimbursed on a charge basis, based on usual and customary costs within a prevailing, with no mechanism and little need until the 1970s to recognize education functions.

Supporting education through charge based reimbursement to physicians is feasible and has been done by Mayo and in part by some primary care programs, notably family practice residencies. There are however, both institutional and structural constraints that limit the viability of relying on charge payments to fully support ambulatory based programs summarized as follows:

— The charge and reimbursement structure that rewards procedural activities at much higher rates than cognitive services.

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— Potential reduced productivity in ambulatory care education and higher costs in contrast to hospital based education (see Lave paper).
— The high indigent and Medicaid caseloads that reduce revenue potential from fee billings where public clinics, community health centers, and/or outpatient departments of public hospitals are the sites of education.
— The departmental structure of practice plans and the consequent lack of flexible funds at the medical school level that could allow it to cross subsidize across revenue generating and nonrevenue generating graduate medical education programs.
— Greater burden on patients since outpatient services generally have higher proportinate deductibles and coinsurance than inpatient services.

Currently Medicare permits the hospital to count residents serving in outpatient settings and allows salary and fringes for them. This assumes however, that the hospital will be willing to pay for services provided outside of the institution. While helpful to the hospital in supporting patient services in outpatient settings in its own facilities, the likelihood of this source of support being available to freestanding ambulatory care settings is limited.

The Importance of Patient Payor Mix As A Source of Financing of Primary Care Education

The scattered studies of the financing of primary care residencies, particularly family medicine residencies, show the importance of clinic fees in supporting these programs. The discussion above has pointed out that while education costs have been incorporated into hospital payments, either implicitly through the charge structure or explicitly through cost pass throughs and indirect adjustments, there is no similar support mechanism for ambulatory care training. Even when directly funded through grants or the hospitals in their own clinics, physician payment/fees for service are an important source of support. The patient payor mix becomes a critical element in the ability to finance the ambulatory care training outside of the traditional hospital setting.

The lack of an education component in the fee structure is compounded by other factors, based on the type of payor for the patient care. Where community health centers serve as the ambulatory care site, they are heavily dependent on Medicaid payments and federal grants under Section 330 of the public health

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service act. These grants do not provide funding for residents. Furthermore, except in states like New York where Medicaid payments to these types of facilities are relatively generous, physician fee payments under Medicaid are substantially lower than under Medicare or private insurance and in some states are actually below average practice costs.

In highly competitive medical markets, HMOs must keep their costs low and premiums competitive. Unless there is another source of support for residents and faculty, the graduate medical education programs would need to either substitute for current costs or generate sufficient income through enhanced productivity to cover the graduate medical education costs in an HMO (see the Lave paper).

An ambulatory care setting in a well insured fee for service community on the other hand, is in a far more favorable financial position. Yet even in these instances ambulatory care training in primary care is more difficult to support than surgical or subspecialty care because of the fee structure. Payment to cover the education costs, assuming that graduate medical education is additive to the cost of practice, would entail transfer of some costs directly to the patient because of deductibles and coinsurance applied to most outpatient services.

Robert Walkington's paper, published in this volume, provides a number of examples of the reliance on different types of program support, including demonstration projects, AHEC funding, state and federal grants.

Who Should Support GME

The question of who benefits and who should pay for graduate medical education has been a subject of debate for many years. The resident's role increases from apprentice to quasi/student provider to independent provider during the course of the residency. Despite the finding of the National Labor Relations Board that house staff should be considered students, the fact remains that they provide a substantial amount of patient care (IOM 1974, 1976; Arthur Young 1986). While the academic medical community has long sought to place graduate medical education within the purview of the medical schools and universities, and therefore might be expected to seek or provide funding for this period of education, the fact remains that resident clinical training has several beneficiaries. Analyses of the activities of house staff uniformly show that a large part of resident/training is spent providing care to patients and frequently without direct supervision (IOM 1974, 1976). The 1976 IOM study found that house staff spent an average of 61 percent of their time providing patient care with or without

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supervision. An additional 15 percent was spent in patient care activities that included undergraduate medical students and other health professions students (1976).

Is the resident a student or an employee? If a student, shouls he/she pay tuition like other graduate students or can one argue that the salary earned is lower than the income that could be generated in practice at the same stage of the career, so in effect the student is paying an implicit tuition in the form of foregone earnings (Yoder, 1980). No matter how the resident is classified, there is no doubt that the resident provides a significant amount of patient care services that might otherwise be provided by physicians who render fees for these services, or more likely services to patients who are uninsured.

From the studies that have been conducted, patients are major beneficiaries of house officer activities. Furthermore, a large proportion of training takes place in public and large teaching hospitals and their outpatient departments that provide care for the indigent. Residents have traditionally and continue to provide indigent care. In some states, the family practice residency clinics are major providers of care to Medicaid and uninsured patients.

Medical schools also benefit from the teaching activities of house staff. The studies show a significant teaching contribution by the residents to the education of medical students. Yet no payment is made by the schools to the teaching sites for these activities.

Faculty also benefit significantly. The resident provides an "extra" hand and coverage for the teaching physicians, as well as contributing substantially to the services that the teaching physician bills for. These fees flow to the medical school department and faculty in addition to the hospital payment for supervising faculty.

Hospital benefits accrue from the availability of round-the-clock physician staffing by residents at lower cost than if provided by community physicians. Teaching programs are also regarded as a qualitative asset for hospitals.

The resident also benefits, receiving the advanced training that provides the skills to practice a high earning profession.

There are multiple beneficiaries. However, current practice places the majority of financing burden on patient care funds. Patient care financing under certain programs, notably insurance premiums and Medicare, is regressive. Opponents of using patient care funds to finance graduate medical education object on several grounds: That this constitutes a "sick tax" on teaching patients

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because the inclusion of the costs of GME tends to increase costs to patients; that because the general public contributes to medical care financing through insurance premiums and social security taxes, payment for graduate medical education through reimbursement may result in inequitable income transfers from people with low incomes to physicians with high income expectations; because some specialties, e.g. surgery, are better able to generate patient care income, there is an incentive to support and expand programs in those specialties, thus affecting the ultimate specialty distribution of physicians (Fruen and Korper, 1981; Commonwealth, 1985). In addition, the distribution of residencies unrelated to either future location of physicians or per capita population, places disproportionate financing burdens on certain states (Hanft, unpublished).

In fact, a case could be made for multiple sources of financing from the multiple beneficiaries if there could be quantification of the benefits that accrue to each. These sources of financing could include:

- Tuition paid by the resident for education.
- Salary support from health professions schools to account for teaching activities of the resident.
- Salary support from the hospital for standby/coverage of services.
- Fees or salary support from patients/third parties for the provision of services.
- Salary support or fee sharing from faculty.

Moving to increased fee support, to support increased primary care training in the outpatient setting raises the following problems, and probably is not feasible unless the financing of practice plans on a departmental basis is changed to institution wide plans. The barriers to increased fee based support in summary include:

- Increased regressivity of the financing.
- Continued incentives to support residencies in the high fee/high earning specialties and inability of the primary care specialties to generate sufficient funds to cover education costs.
- The concentration of GME in settings with a large number of indigent, both Medicaid and uncompensated care, patients.

Large amounts of dollars, not including faculty fees, estimated at 8-10 billion dollars (4 billion of Medicare funds) flow for the support of graduate medical education. The issue is not the amount of revenues but the distribution of the revenues in support of graduate medical education priorities.

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FINANCING GRADUATE MEDICAL EDUCATION IN PRIMARY CARE: OPTIONS FOR CHANGE

Sandra C. Peinado, M.D.
Fellow, General Internal Medicine
and
John M. Eisenberg, M.D., M.B.A.
Sol Katz Professor of General Internal Medicine
University of Pennsylancia School of Medicine

Abstract

To satisfy the nation's need for well-trained primary care physicians, graduate medical education in primary care requires adequate financial support. The current mechanisms of GME financing favor inpatient and procedural care, making the support of primary care programs difficult, since they are more oriented towards outpatient evaluation and management. The majority of graduate medical education funding comes from patient care reimbursement through Medicare Part A direct and indirect payments, and other third party payers. This scheme results in difficulties for primary care programs in resident and faculty compensation, as well as general difficulties for primary care program development.

Criteria for evaluating proposals that aim to improve the financial support of primary care programs include financial, administrative, and educational implications of the options, as well as the views of interested stakeholders. The alternatives for sources of funds to support primary care GME include changes in existing Medicare payments, an increase in categorical GME funding, an increase in ambulatory payment, an increase in grants, commitments from future employers, and a redistribution of current funds. Alternatives for spending these funds to aid primary care programs include dividing the sources in three ways: on a per-resident basis, by competitive grants, or by incentives for primary care education. An analysis of the alternatives for changing GME financing is discussed in the paper. The most favorable options are summarized and recommendations for further analysis are made.

The education of primary care physicians is of growing national concern. However, graduate medical education (GME) is principally funded through patient care reimbursement for inpatient and procedural care. While there has been a

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general shift from inpatient to outpatient sites for all medical training, primary care programs provide a greater proportion of care in ambulatory settings, and are less procedurally oriented than other specialties. Thus, residencies in family medicine, general internal medicine and general pediatrics are less likely to be adequately reimbursed by patient care funds. Alternatives for improved financing of primary care GME must be explored if the nation's need for an adequate supply of well-trained primary care physicians is to be fulfilled. Financial support is needed to assure both an adequate supply and a high level of quality in primary care programs.

The current mechanisms for funding GME will be reviewed briefly here and the resulting difficulties encountered by primary care programs discussed. We delineate a set of criteria by which any alternative method of graduate medical education financing should be judged. The range of options for change is described and then analyzed in terms of the ability of each option to satisfy the proposed criteria.

Current GME Financing

Funds for residency programs are generated primarily from patient care reimbursement by third party payers. Additional funds derive from direct federal, as well as state and local support. The degree to which the financing of general internal medicine, general pediatrics, and family medicine programs differs, if at all, from the general pattern of GME financing is not well known.

Payment for Patient Care

Under the Prospective Payment System, Medicare Part A reimburses teaching hospitals for a proportion of the direct costs of medical education. These include residents' salaries and fringe benefits, administration and supervision costs of teaching physicians, education supplies, space costs, and associated overhead. Faculty salaries can be included if the teaching physician is salaried by or works under a written agreement with the hospital. Teaching hospitals are paid a set amount by Medicare for each resident, based on each hospital's 1984 costs, adjusted for inflation. Estimates of the magnitude of these payments in 1988 range from $975 million[1] to $1.4 billion[2].

In addition to these direct cost payments, Medicare Part A pays teaching hospitals for the indirect costs associated with graduate medical education. Introduced by HCFA in 1980, these payments reimburse hospitals for the higher operating costs associated with resident-directed patient care. As described by

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Judith Lave in a review of these payments, published in this volume, reasons for the higher costs of teaching hospitals may include: "the increased use of ancillary services due to the residents' inexperience; the tendency in teaching hospitals to try to make a more accurate diagnosis both for educational purposes and to satisfy the more academically minded physicians' need to know; the increased availability of state-of-the-art testing facilities and treatment technologies; the fact that very sick patients may be treated more aggressively and more innovatively; the decreased productivity of other employees such as nurses who have to break in the new residents and increased record keeping requirements."[3] The indirect payment is based on a percentage of a hospital's ratio of residents to beds. For fiscal year 1989, PPS payments to teaching hospitals are increased by 7.7 percent for each 0.1 increase in a hospital's resident-to-bed ratio[1]. In 1988, these payments were estimated to be $2.02 billion dollars[1].

In addition to these payments to teaching hospitals under Medicare Part A, teaching physicians can bill for patient care under Medicare Part B. This includes patient care services provided while fulfilling supervisory duties.

Medicaid has lagged behind Medicare in its reimbursement to teaching hospitals for the costs of GME. Of 37 states with Medicaid prospective payment systems, 23 include "some type of adjustment for teaching costs."[2] Some states have threatened to withdraw their support of graduate medical education through Medicaid.

Private insurers have traditionally paid teaching hospitals' higher charges, which have included the costs of GME. Specific funds are not targeted as a GME contribution by insurance companies, in large part because hospitals have not specified what portion of their charges could be attributed to resident and fellow training. With the advent of HMO's, PPO's, and other managed care organizations negotiating for lower hospital charges, however, a lower proportion of GME costs can be expected to be obtained from these sources[4].

Direct Federal Support

The Veterans Administration currently supports 12% of residency positions in the U.S. In 1988 the VA invested $224 million in resident salaries and fringe benefits alone. As of 1986, this included 15% of all general internal medicine residents, only 1.1% of family medicine residents, and none in general pediatrics[5].

Title VII of the Public Health Service Act enables the Bureau of Health Professions to help support approximately 10–15% of residencies in internal medicine and pediatrics. In 1988, 79 awards, totalling $13.8 million, were

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approved for general internal medicine and pediatric residencies. Grants to 184 programs in family medicine were approved for a total of $20 million[6]. Originally designed to help increase the overall number of physicians today, grants under Title VII are awarded to programs that aim to redress perceived geographic and specialty maldistribution of physicians[7]. This section of the Public Health Service Act also enables the Bureau of Health Professions to support faculty development in family medicine, general internal medicine and general pediatrics. In 1988, 29 family medicine programs received $4.5 million for this purpose[6].

Direct State Support

State support of GME is highly variable but generally stems from three sources other than Medicaid payment. State governments provided operating subsidies to teaching hospitals in 29 states as of 1987 [2]. Direct support for resident education was provided by 37 states, 17 of which targeted this support to family practice programs. State support to medical schools indirectly aids GME in its support of supervising physicians' salaries[2].

Issues For Primary Care GME Raised By Current Funding Scheme

Primary care residencies spend most of their resources on personnel costs. The main components of their budget include the following: full and part-time faculty salaries, residents' salaries, administrative costs of academic units, operating costs of outpatient centers, and educational evaluation and/or quality control[8-10]. These costs have been particularly difficult for primary care residencies to cover for several reasons. These include the facts that 1) the services provided by primary care residents and faculty are generally paid at relatively low levels compared with inpatient and procedural services; 2) primary care residents' contributions to the operation of hospital inpatient programs may be perceived by the hospital administration to be less essential than that of residents in other specialties; 3) primary care residencies include a number of rotations on other specialty services, usually in outpatient settings, where the residents' ability to provide service is limited; and 4) primary care programs generally include substantial amounts of formal education in topics such as prevention, medical decision-making, and doctor-patient communication, and this time in conferences and workshops may occur at the expense of service time.

From the point of view of primary care residencies, the current scheme of financing graduate medical education principally through hospital payment is flawed. Physician payment also favors surgical and certain medical fields by paying them disproportionately for patient care, so that physicians' revenue from

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patient care is less capable of cross-subsidizing educational programs. Other funds are insufficient for primary care program development. In the following paragraphs, the problems of the current GME reimbursement scheme are discussed in somewhat more detail in terms of how the arrangements result in difficulties in resident and faculty compensation, as well as general difficulties for primary care program development.

Resident Compensation

1. Since the majority of patient care payment (and also the majority of GME financing) is obtained through hospital care, residents and their educational programs are disproportionately reliant on inpatient hospital services[2, 11].
2. Residents are an important and apparently economical source of manpower for teaching hospitals. Several studies have shown that replacing residents with fully trained workers would cost hospitals more than residents' salaries[8, 12]. In shifting the training of residents, especially primary care residents, to the outpatient setting, hospitals will be forced to hire more clerical and technical support, nurses, and house physicians, and to develop better clinical information systems. Thus, unless hospitals are reimbursed for the time spent by residents in outpatient settings, they are likely to oppose the development of curricula that focus on those settings and deploy residents away from traditional inpatient settings.
3. Under Medicare Part A direct medical education payments, wide variation exists in per-resident costs among hospitals. The range of per resident amounts for the base year varies from below $10,000 to over $100,000 per resident[13]. This differential is now fixed at 1984 levels and embedded into the formula used by Medicare[7]. This has almost certainly led to inequities among teaching hospitals in their ability to fund primary care programs and to support reform of residency education.
4. The Omnibus Budget Reconciliation Act of 1986 allows, under Medicare Part A direct GME payments, that residents' time in outpatient settings may be paid by hospitals if those hospitals incur "all or substantially all" of the cost of training. How this will be interpreted is important for the continued development of an adequate variety of outpatient teaching sites. While proposed rules have been published in the Federal Register[11 13], the final explication of those rules has not been established.
5. Although Medicare Part A direct GME payments pay for time spent by residents in outpatient sites, there is no requirement that these payments actually

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be allocated to support the teaching costs of those practices. Thus, faculty may report time spent in graduate medical education and the hospital may be paid for their efforts, but the hospital need not channel these funds directly into the teaching program.

6. Medicare Part A indirect medical education adjustment payments exclude the time spent by residents in outpatient sites other than hospital clinics from their calculations.
7. Most state Medicaid programs and private payers do not recognize teaching as a reimbursable cost in the outpatient setting.

Faculty compensation

1. Outpatient payment for physician services is generally less than inpatient payments, allowing less for the support of residency programs. Medicare Part B reimburses 80% of an allowable physician charge for outpatient visits, and the customary charge for hospital-based teaching practices is set at 85% of the prevailing rate (in part to avoid it being even lower because of the lower profile of charges often rendered to the low-income clientele of these clinics). The population served by most teaching clinics is generally poor, resulting in low collection rates, and preventive services (almost all of which are outpatient) are infrequently covered by third party payers[14]. For these reasons, outpatient sites are less able to support supervisory and other faculty costs.
2. Outpatient teaching is generally more faculty-intensive than inpatient teaching. Fewer residents and students can be involved in an ambulatory visit, and faculty must be present for the entire period of care. Patient visits are also longer, on average, in a residency practice, but are reimbursed under Medicare Part B and other payers at best as if in a private practice setting[7]. The fee differentials between evaluation/management ("cognitive") and procedural services compound the problem. Adoption of a Resource Based Relative Value Scale may partially compensate for this differential if it redresses the perceived inequity in payment levels for evaluation/management and procedural services.
3. Faculty billing for outpatient visits may be paid at a rate that may provide more net income for hospital-based clinics than for non-hospital-based clinics (this results, in part, from the way in which payers assume overhead is paid by the hospital and thus pay a fee corrected for what overhead is assumed to have been). This formula may provide a disincentive to the development of community-based practices for resident training.

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4. Primary care faculty may have a disproportionately difficult time developing their own teaching and research skills since they are often required to spend a large proportion of their time in patient care to generate practice income. Development of teaching and research skills is particularly needed at this time to improve the quality and efficiency of primary care residency programs. In addition, primary care research tends to be poorly funded by federal agencies, thus making it more difficult for these faculty to gain support for their academic activities and to progress in academic careers.
5. Faculty time is reimbursable as supervisory time under Medicare Part A direct GME payments only if faculty are salaried employees of or have a written work agreement with the hospital. The fear of double dipping by faculty, that is billing under Part B while being reimbursed for time spent under Part A, has led to restrictive rules on faculty's ability to bill for services rendered by residents they are supervising. This presents a potential problem for reimbursement of clinic services under Part B, for the employment of part-time faculty, and for the partial compensation of voluntary teachers[15].

General Concerns

1. Medicare Part A indirect medical education adjustments are based on an estimate that was doubled in the establishment of the Prospective Payment System to cover increased costs associated with case mix and market factors[1]. This may cause an inequitable distribution of payments: hospitals with larger programs may be reimbursed relatively more since their increased costs of clinical care can be spread over more residents, though their costs may not be proportionately higher. The recent introduction of a declining rate of indirect adjustments addresses this issue, although the decrease in payment per resident is relatively small. On the other hand, if the indirect costs of medical education are disproportionately higher with larger programs (which tend to be located in major medical centers), smaller programs might benefit. Whether this relatively fixed rate of indirect payment per resident helps or hinders primary care programs is not known.
2. Support through Title VII of the Public Health Service Act (for training grants administered by the Bureau of Health Professions) is small and suffers from year to year uncertainty. It also requires that at least 25% of a resident's time be spent in a continuity setting, which many programs find difficult to accomplish and unduly restrictive on their curriculum[7]. The requirement that residents spend at least 25% of their time in a continuity practice has limited the

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ability of programs to experiment and to utilize other ambulatory care sites than continuity settings, such as specialty clinics and practices, home care, geriatric practices, and occupational health.

3. Internal Medicine and Pediatrics receive little state support. Family Medicine and Pediatrics receive little VA support.
4. The proportion of GME financing paid by HMO's and PPO's, which is unknown, may actually decline, as these managed care systems negotiate for smaller payments or switch to non-teaching hospitals[16].

Criteria For Evaluating Alternative Proposals

Any proposal for altering the current mechanism of financing GME with the purpose of improving primary care training should be judged from at least four viewpoints. As discussed here, these include 1) financial implications; 2) administrative requirements; 3) educational impact; and 4) views of interested stakeholders. (Table 1) Although we discuss these criteria individually, we recognize that to use them to evaluate any proposal, the complexity of the interrelationships between the criteria must be considered. Simply adding up a score of how well any one proposal meets the individual criteria may oversimplify its relative advantages or disadvantages. We do not expect any one proposal to satisfy all criteria, but by judging all proposals against the same criteria, we may find certain alternatives that make more sense than others.

Financial Criteria

1. **The proposal should be budget neutral, at least in terms of the federal budget.** During a time of fiscal constraint for the U.S. government, it would be politically infeasible to raise total federal spending for GME substantially. Therefore, increases in funding for primary care graduate medical education would be likely to require decreases in funding in other federal expenditures, not necessarily but probably in other expenditures related to GME.

   The ideal of social budget neutrality also suggests that a reduction in other outlays will probably be required to identify additional funds for primary care education. It is likely that these reductions will be in the health care sector. While these reductions may occur in the funds available for hospital or physician

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payment, they could also imply reduced profits or surpluses for third party payers or managed care systems, decreased state expenditures in other areas, lower salaries for residents or faculty, or decreased funds available for medical care services. Politically more difficult, but certainly possible, would be increased health insurance premiums, surcharges, or higher taxes.

2. **All those who benefit from GME in primary care should contribute to paying its costs.** All of those entities which benefit from quality education of primary care physicians should contribute to its costs. These entitites include hospitals, patients, health maintenance organizations, physicians themselves, payers (e.g., HCFA, insurance companies), and society as a whole.
3. **Funding should be predictable.** The financing of GME should not vary widely from year to year to such an extent that programs cannot plan for several years in advance. Program directors need to be exempt from year to year uncertainty in funding in order to develop stable, high quality residencies. Policy makers, in both professional and legislative organizations, also need time for continued development of financial policy and structures.
4. **Funding should be sufficient.** The support of GME in primary care should be enough to cover all reasonable costs. The definitions of "sufficient" and "reasonable" are clearly important. They would include clear delineation of what appropriate costs of residencies are, and should attempt to adjust those costs for inflation. The definition of "sufficient" should include some mechanism for adjusting to the shifting nature of GME. Curricula for primary care residencies will change, of necessity, and funding should be flexible enough both to adapt to those changes and to allow the decisions for curricular change to remain in the hands of qualified educators. The percentage of residents' time spent in an ambulatory setting is expected to increase in the next few years and "sufficient" funding options should be able to cover the cost of that increase. Another component of this criterion is a decision regarding the number of doctors this funding should support. For example, "sufficient" funding may be limited to that of all graduates of American medical schools, to all teaching hospital positions, or to all graduates who agree to fill federal health manpower needs.

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Administrative Criteria

1. **The implementation of any proposal should be administratively feasible.** The initiation of any new funding scheme should be simple and not unduly expensive. If new administrative mechanisms are required, the design and development of these mechanisms could delay, complicate, or even prevent effective deployment of the funds to support primary care education.
2. **The ongoing administration of any new funding scheme should be simple.** Ideally, present administrative mechanisms should be simplified rather than made more complex. It is likely that administrative complexity would make the program difficult to monitor and unwieldy to payers, hospitals, and educators.
3. **The ongoing administration of any new funding scheme should be inexpensive.** In order to maximize the portion of funds actually available for support of primary care education, the ongoing administration of the program should be designed to minimize the bureaucratic overhead required at all levels, from payer to educator.

Educational Criteria

1. **Curricular autonomy and flexibility should be maintained.** The funding of GME in primary care should provide autonomy for educators in the choice and implementation of curricula, as well as flexibility for the development of innovative educational programs.
2. **The growth and development of primary care curricular elements should be fostered.** Change in GME financing should provide incentives for the development and strengthening of primary care in established programs. This applies not only to the creation of primary care elements within traditional internal medicine and pediatric programs, but also to the support of family medicine curricula and already established programs in primary care internal medicine and pediatrics. In internal medicine and pediatrics, emphasis should be placed on transforming

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traditional programs to a primary care emphasis rather than adding still more residency positions in these disciplines.

3. **High quality programs in non-primary care specialties should not be adversely affected.** If any change in GME funding results in decreased funding available to non-primary care specialties, a mechanism should be adopted to prevent across-the-board-cuts to these programs. The better programs should not lose money, but marginal programs should be eliminated, especially in those specialties perceived to have more training positions than necessary for the nation's needs. However, for specialties now handsomely paid for physician services, loss of GME financing will probably have less impact on the viability of residency programs.
4. **Incentives should favor high-quality primary care programs.** No specific type of program is implied here. Rather, some recognition should be made of those programs that strive to achieve strong educational goals and are not simply sources of inexpensive manpower for their teaching hospitals.

Stakeholders' Criteria

Stakeholders are the entities that are most likely to be interested in and/or affected by change in GME financing. The categories are intended to be generic. We do not expect to be able to predict the response of any specific individual or individual organization (with the exception of HCFA) to any one option.

1. **Society:** U.S. citizens who benefit from an adequate supply of well-trained physicians, and tax payers whose dollars contribute to the training of physicians.
2. **Federal Government:** Congress, elected officials, and federal departments and agencies.
3. **Health Care Financing Administration:** considered separately because of its particular interest in and importance to the policies discussed.
4. **State Government:** state legislatures, elected officials, and agencies.
5. **Private Payers:** insurance companies, self-insured businesses, health maintenance organizations (HMOs), preferred provider organizations (PPOs), individual practice associations (IPAs), and employers who contribute to a health insurance plan.

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6. **Teaching Hospitals:** hospitals that support programs in graduate medical education.
7. **Non-Teaching Hospitals:** hospitals that do not support programs in graduate medical education.
8. **Physicians:** licensed physicians and their representative professional organizations (e.g., American Medical Association).
9. **Primary Care Specialties:** physicians practicing in internal medicine, pediatrics, and family medicine, as well as their professional organizations, specialty certifying boards, and residency review committees.
10. **Non-Primary Care Specialties:** physicians practicing all other medical and surgical specialties as well as their certifying boards, professional organizations, and residency review committees.
11. **Primary Care Educators:** faculty of residency and fellowship programs in primary care fields, and their professional organizations (e.g., Society of Teachers of Family Medicine, Ambulatory Pediatrics Association, Society of General Internal Medicine).
12. **Non-Primary Care Educators:** faculty of residency and fellowship programs in all other medical and surgical specialties.
13. **Primary Care Residents:** physicians in primary care residency programs.
14. **Non-Primary Care Residents:** physicians in residency positions for other medical and surgical specialties. Neither educators, specialties, nor residents can be divided cleanly into all primary care or all not primary care disciplines. One view would include only programs in general internal medicine, general pediatrics, and family medicine. A more moderate view, and the one used here, includes the first three years of all internal medicine and pediatric programs, and family medicine programs. A third view might include, in addition, geriatrics fellowships, and residencies in obstetrics-gynecology, occupational medicine, and/or preventive medicine.
15. **Patients:** current and potential individual users of medical care services.

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Source of Funds

The question of how money is to be generated for the support of primary care graduate medical education may be considered separately from the question of how that money should be most appropriately spent. We will address both questions, but will not discuss the financial needs of residency programs in primary care. The relative merits of these proposals for identifying and spending funds for primary care GME are analyzed after the options are presented. Sources for funds to be targeted for primary care GME can be organized into six categories, as described below. The various proposals for identifying and obtaining these funds are summarized in Table 2. In addition to these "extrinsic" sources of funding, it behooves primary care educators and specialty organizations to experiment with methods of improving the operating efficiency of their academic units and clinical sites.

Change in Existing Medicare GME Payments

Additional funding for graduate medical education in primary care could be obtained from cuts in existing programs which support GME. The only substantial programs, however, are Medicare Part A direct and indirect payments. One option (#1) would eliminate both direct and indirect payments and reallocate the money to favor ambulatory training. Alternatively, direct (#2) or indirect (#3) payments could be selectively eliminated. A reduction in direct (#4) or indirect (#5) payments should also be considered with the intention of redistributing the funds to primary care programs. Another proposal (#6) would limit Medicare direct and indirect payments to hospitals for the years required by physicians to gain their first certification. Adding incentives and disincentives to the Medicare Part A direct payment programs (#7) to favor primary care curricula would redistribute current funding.

Increase in Categorical GME Funding

Additional funding for GME in primary care could be obtained from new sources. These sources might involve an increase for categorical GME financing through such options as an increase in Medicaid reimbursement (#8), or a contribution from insurance companies and HMO's as part of their payment (#9). The latter might be facilitated, for example, by federal regulations that require HMO's to pass on that portion of their reimbursement from Medicare that has been designated in the fee-for-service sector for the direct and indirect costs of graduate medical education (about 3% of the Medicare dollar). Medicaid funding

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of GME could take place by requiring that Medicaid programs at least use a portion of federal matching dollars to support GME.

Other sources for GME financing could include a new tax on health care providers or payers. A tax on providers might emerge as a sales tax on individual physicians' services (#10) or on hospitals, specifically those hospitals without a substantial commitment to medical education through support of residency programs (#11). Such a tax on services provided by non-teaching hospitals would recognize their dependence on teaching hospitals to train their future staff physicians and would partially offset the price advantage that non-teaching hospitals have in offering their services. A program that would more directly encourage primary care education would be one that levied a tax on hospitals without primary care programs. A tax on third party payments for health care services (#12) could be levied to establish a new primary care GME fund[17]. In addition, a surcharge on physicians' licensing fees (#13) could generate funds for primary care education [18].

Increase in Ambulatory Payment

An increase in the payment provided for ambulatory patient care would directly aid primary care programs. Adopting a Resource Based Relative Value Scale for Medicare Part B payments (#14) would redistribute funds from non-primary care to primary care specialty providers. This also might be achieved through the extension of outpatient insurance coverage by private and/or public sources (#15), from an increase in Medicare Part B payments through a teaching adjustment for ambulatory services (#16), or by allowing residents to bill for outpatient visits at a rate that would include the costs of supervision (#17).

Grant Support

Another potential source of increased funding is through grants. These may originate from foundations (#18), an increase in Title VII expenditures for residency support (#19), an increase in Title VII faculty development grants for primary care (#20), an increase in Veterans Administration support (#21), or an increase in state grant support (#22). State grant support could include a broadened commitment to primary care residency funding, including general internal medicine and pediatrics, and a renewed commitment to family medicine.

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Commitment from Future Employer

A fourth new source of funds might be provided by a commitment from future employers of physicians to support GME in primary care in return for a commitment from physicians to work for a specified period of time. For the purpose of evaluating the implications of this proposal, it is divided into support provided by HMO's (#23), by states (#24), by the Health Resources and Services Administration (#25), and by the National Health Service Corps (#26).

Redistribution of Funds

In addition to changes in Medicare payments and generating various new sources of GME funding, a third source of financing for primary care would involve redistribution of the current amount dedicated to GME support (of course, some of the other proposals described here involve redistribution of current funds, such as reallocating the direct or indirect Medicare GME payments). These options include a redistribution of money from Title VII of the Public Health Service Act for primary care training grants (#27) among all primary care programs for the support of a specific aspect of primary care education (e.g., office supervision or behavioral science curriculum), or the encouragement of teaching hospitals and faculties to redistribute their clinical income to eliminate the discrepancy in primary care versus subspecialty clinical income (#28)[19].

Expenditure Alternatives

The second question in considering the options for altering graduate medical education financing is how the money generated should be spent. There are three principal alternatives for dividing the money to benefit primary care programs (Table 3). The first involves dividing the money equally among all primary care residencies on a per resident basis. Dividing the funds in this way may not account for the proportionately higher fixed costs of small programs, but it is hoped that residencies will aim for sizes that allow them to take advantage of economies of scale. The second alternative is to divide the money on the basis of competitive grants to primary care programs. This would involve a significant bureaucratic structure, either new or an expansion of an existing entity, to administer the application and disbursement process. A third alternative is to divide the money on the basis of incentives for primary care education (but to remain budget neutral). This option would also involve some administrative entity to establish and enforce criteria, and to disburse funds accordingly. These incentives might be based on the physician manpower recommendations of OBRA '86 or of the Council on Graduate Medical Education. This would involve

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proportionately greater support of those specialties which are deemed undersupplied, and less support for those specialties which are well-supplied with physicians.

Within each of these alternative spending plans, funds could be divided among residencies to use as they deem most appropriate, or to be targeted for a specific purpose. The funds might be used 1) to support faculty salaries, specifically to decrease their dependence on clinical income and to encourage adequate teaching and research; 2) to support resident salaries, in order to make their training less dependent on hospital rotations; 3) as a supplement to the operating revenue of ambulatory teaching sites, in order to operate and improve existing sites and to aid the development of non-hospital based sites; 4) to support primary care curriculum development, either to improve overall quality or to develop specific areas (e.g. clinical economics, psychosocial aspects of medicine); 5) to help support the operation of the academic unit; 6) specifically to increase the percentage of time spent by residents in ambulatory sites; or 7) to foster cooperative teaching arrangements among the primary care specialties of pediatrics, internal medicine, and family medicine and with related disciplines.

Analysis of Funding Options

Each of these alternatives for raising funds for primary care GME and for spending on primary care GME has been considered in light of the criteria we have proposed. The options for sources of funds are analyzed first, followed by the options for spending. It is not our intent to suggest that compliance with each criterion and approval by each stakeholder is valued equally. The relative weights of each criterion and each stakeholder need further consideration by the IOM committee. In addition, the degree to which funding and spending mechanisms satisfy the criteria will vary, so that a full analysis of these options must weigh both the importance of the criterion or stakeholder and the degree to which it is satisfied or violated. In general, the resources needed to acquire this data exceed the scope of this report.

The elimination or reduction in Medicare Part A direct and/or indirect payments to all teaching hospitals (options #1–5) in order to free money that could be redistributed for the benefit of primary care programs can be analyzed as a group. None of these options broaden the scope of payers of GME, nor do any of them provide that quality non-primary care programs will not be hurt. Non-primary care specialties, educators, and residents, as well as teaching hospitals, can be expected to object vociferiously to these options. They would have to develop new resources or cut into attending physician profits to support training in their respective fields.

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The alternative of limiting Medicare. support to physicians' first certification (option #6) would save money. It would not, however, necessarily provide any additional funds to foster the growth of quality primary care programs and it would limit non-primary care residencies. If used in combination with a spending plan that called for a reallocation of the savings toward improving primary care residencies, this alternative may be more favorable. It would be an extension of initiatives taken in OBRA '86, and we feel that these steps were appropriately extensive in this regard.

The options of incorporating incentives and disincentives to Medicare direct and indirect payments (option #7) fulfill only a few criteria. These remedies would be budget neutral and the funding stream would be predictable. Primary care development could be encouraged by well constructed incentives and quality programs might be relatively well rewarded. The administration of such an option, however, might be difficult and expensive. However, certain measures could be instituted that would actually simplify Medicare payment of hospitals, such as including ambulatory care time in calculating the number of residents. Non-primary care residents, educators, and specialties can be expected to object. Teaching hospitals may oppose the measure, too, if they consider this an undue intrusion on GME, and a cause of significant administrative difficulties.

Despite the fact that there would be substantial resistance to major shifts in Medicare direct and indirect payments, some changes are reasonable and could benefit primary care educators.

First, time spent by residents in ambulatory care activities should be counted in the calculation of a teaching hospital's number of full time equivalent (FTE) residents for both direct and indirect payments. These shifts in the number of FTE residents should not cause an increase in the total direct or indirect payments but should be incorporated into a recalibration of the per-resident payments.

Second, faculty effort in primary care education should be credited to the allowable cost of medical education that is included in the hospital's direct medical education payment. Hospitals should not be frozen at their 1984 levels, but should be allowed to adjust their reported costs for legitimate changes in the cost of operating their training programs.

Third, an administratively simpler scheme would be to pay the same amount per resident to all hospitals, perhaps with different adjustments for geographic variation in the cost of operating programs, and perhaps with different payments for different specialties to reflect the cost of training or to incorporate incentives for the training of physicians in selected specialties.

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Fourth, hospitals might be required to demonstrate that funds generated from direct medical education payments were actually expended on medical education. One reform would be for HCFA to pay these funds directly to the residency programs.

It would make little sense to use Medicare's indirect medical education adjustment to pay for primary care education since these indirect payments were never intended to pay for GME. Instead, they were instituted to pay for the higher cost of care in teaching hospitals. Since residents' time in ambulatory settings was included in the initial calculation of the per-resident payments, this portion of residents' time should remain in the formula.

The issue of providing adequate health care to the indigent should be considered as a separate topic, although better funding of care to the indigent would particularly benefit training programs located at inner city medical centers.

The proposal that Medicaid programs conform with Medicare Part A direct cost reimbursement (option #8) would foster growth and development of primary care programs, since primary care residencies probably care for a disproportionate share of Medicaid patients. It would not specifically encourage quality primary care programs but it would also not hurt non-primary care programs. Because it is not intrinsically budget neutral, federal and state governments would probably oppose this option. However, if a major federal program that would relieve the present burden on Medicaid were instituted (e.g., mandatory employer-sponsored insurance, or a national program of long term care insurance), then the money made available to Medicaid for other expenditures could be partially allocated to enable states to share the federal burden of financing GME.

A plan for encouraging voluntary contributions for primary care GME from insurance companies and HMO's fulfills few criteria. Its primary disadvantages are that the funding stream would be unpredictable and very likely insufficient. However, the option of mandatory payment for GME (option #9) by payers other than federal programs would more equitably distribute the responsibility of paying for ambulatory GME. With the exception of insurors, stakeholders would generally favor such contributions.

The option of imposing a sales tax on physician services (option #10) fulfills only a few criteria and would face significant stakeholder opposition. Both the initiation and ongoing administration of such a program would be difficult and costly. However, adoption of a popular spending plan that would fulfill the educational criteria might improve its relative advantage. Physicians (including practitioners, physician educators, and specialty organizations) and hospitals would

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probably object strongly to such taxation. Patients, too, may object if they fear the cost will be passed on to them.

The alternative of imposing a tax on hospitals that do not substantially support GME (option #11) fulfills the financial criteria, and ongoing administration of such a measure would be simple and relatively inexpensive. Initiation of this option, however, may be complicated and costly. Non-teaching hospitals would oppose the measure strongly and possibly pass on the cost to the health care consumer. Patients, too, may then object, but such a result might decrease the pricing advantage currently enjoyed by non-teaching hospitals.

A tax or surcharge on third party payers (including Medicare, Medicaid, insurance companies, and HMO's) (option #12), would fulfill all financial and administrative criteria. Those referring to educational goals, however, depend on how the funds would be spent. All educators, specialties, and hospitals would probably support the measure, since it would broaden and more equitably distribute the burden of GME costs. State governments, as well as insurance companies, could be expected to oppose such a surcharge or tax. Patients, too, might object if they were to perceive such a tax as resulting in higher prices for medical care. However, the federal government, and HCFA in particular, would likely welcome being better able to share the cost of GME with other payers.

A tax or surcharge on physician licenses (option #13) satisfies all financial and administrative criteria except one; the initiation of such a program would require an organization to collect and disburse these funds, which might be expensive and unwieldly. Physicians would strongly object to this tax, although other stakeholders would generally be supportive. As with the other forms of taxation, this option's outlook might improve with a popular spending plan.

Adoption of the Resource Based Relative Value Scale (RBRVS) (option #14) would provide primary care programs with more clinical income relative to other specialties. It would be predictable, administratively feasible, and as long as it does not coincide with an increased volume of service, budget neutral. Non-primary care specialties, educators, and residents are likely to oppose the measure, but recent advocacy by the American Medical Association and American Association of Retired Persons augers well. Congressional and administration support are likely to depend upon linkage with volume control mechanisms. In addition to its effect on funds available to primary care educators, an RBRVS may stimulate more interest among medical students and residents in primary care careers.

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An extension of outpatient third party coverage to include more outpatient services (option #15), to increase the allowable charge payable in teaching settings, or to include more of the working poor, would aid almost all GME programs. However, quality primary care programs would not be particularly encouraged. Without offsetting decreases in funding for other services or populations, this solution is not neutral for the federal budget. Although it might be argued that increasing outpatient care, particularly preventive services, could save money due to lower inpatient costs, the evidence for this assertion is weak. Federal and state governments, as well as third party payers, would probably oppose such a measure as a way of enhancing primary care GME, but other stakeholders would be supportive.

The option of adding a Medicare direct, teaching adjustment for ambulatory services through Medicare Part B (option #16) would not be budget neutral unless the remaining payments were recalculated, nor does it broaden the scope of contributors to GME. The development of cost estimates for the adjustment may be difficult. However, such a payment could aid primary care programs, in particular if criteria are established regarding circumstances in which physicians' bills may be supplemented by a direct teaching adjustment.

The option of allowing residents to bill third party payers for outpatient care (option #17) would not benefit primary care residencies exclusively, nor would it be budget neutral. If the billing costs were resource-based and if costs of supervision are included in the charges, this billing would probably be higher than that of attending physicians, especially for more junior trainees. The government and third party payers would be likely to oppose this option.

Alternatively, foundations could be encouraged to support GME in primary care (option #18), perhaps through matching government-foundation programs. In this case, those who pay would not benefit directly, nor would all those who benefit from GME pay for it. The predictability of such grants could be increased by lengthening their time frame to a minimum of five or more years and by assuring a tapering period at both initiation and termination of the grant. Grants could encourage quality in primary care education by targeting the funding to programs that agree to use the money for predetermined purposes (e.g., faculty development, training site development, curricular innovation).

An increase in Title VII funding and federal faculty development grants for primary care (options #19 and #20) each fulfills the criteria well with two significant negative effects. These options are not budget neutral unless money is found elsewhere to fund them. They do not extend the burden of GME payment to all who benefit, except by passing on the costs through taxation. The federal government would be the only stakeholder expected to oppose the measure.

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The option of increased VA support of primary care GME (option #21) would be budget neutral only if it were funded by a reallocation from other VA expenditures. While it would increase the scope of beneficiaries contributing to primary care GME, its focus would likely be narrow. VA funding of primary care education would principally aid internal medicine since few family medicine and pediatrics programs receive VA support.

An increase in state grants to primary care residencies (option #22) fulfills the administrative criteria, since most states already have mechanisms in place for identifying and distributing such funds. As with all grants, the predictability of such funding could be aided by assurance of funding for a specified length of time, such as a minimum of five years. Educational objectives can be met as long as the funds are aimed at primary care programs for quality-enhancing purposes (e.g., funding of supervising physicians, curriculum development, development of new sites for training in underserved areas) and do not dictate curricula in ways that are idiosyncratic of the state legislature or administration. State tax payers and legislatures would likely object to an increase in their contribution to GME, especially in states where primary care physicians are practicing in adequate numbers and are adequately distributed.

Funding primary care GME through commitments from future employers , such as HMO's, states, HRSA, or the National Health Service Corps (options #23–26), involves an increase in overall expenditures for GME, but payers would benefit directly and more of those who benefit from GME would contribute to its costs. However, if this option requires a contract between the individual residents and future employers, the funding stream is not predictable for the training program. The administrative complexity of such a program would vary, depending on whether the future employer had a mechanism already in place for coordinating such efforts, such as the National Health Service Corps or military. Such an option, while increasing the funding of primary care GME, does not necessarily ensure an improvement in quality, although future employers would have a stake in assuring high quality and appropriate training to fulfill their organizations' needs. The stakeholders most likely to object strongly to this proposal are the primary care residents themselves, who may view it as an inequitable solution whereby primary care residents are singled out from other residents and forced to take on the financial burden of their program. Primary care educators may agree with the residents and also dislike the option because of its unpredictability in financing their programs.

Redistribution of money from Title VII of the Public Health Service Act among primary care residencies (option #27) fulfills almost all of the criteria. For only one criterion would this option be considered to have a negative effect; it would not broaden the scope of payers. Not all of those who benefit from GME

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would pay a portion of the costs. Stakeholders would generally favor such a proposal, with the important and probably vigorous exception of those programs who now rely on Title VII for a significant portion of their funds. Since it is highly unlikely that a simple redistribution of Title VII funds would provide for "sufficient" funding of primary care programs, regardless of how "sufficient" is defined, an increase in Title VII funding along with a redistribution to primary care programs could have a salutory effect on primary care education with relatively less need for new funds than many other options.

The alternative of encouraging academic health centers to devise plans whereby clinical income is redistributed from more clinically lucrative medical and surgical specialties to primary care departments (option #28) fulfills relatively few criteria. Administratively, it would be difficult for most hospitals to accomplish this task, since non-primary care physicians would strongly object. It would help support primary care programs in large teaching hospitals but not in smaller community hospitals with fewer physicians on a medical center practice plan. As a voluntary effort, or one instituted by medical center leadership on a local level, it is to be encouraged.

Analysis of Spending Alternatives

When the spending options described here are analyzed by the criteria discussed, three clusters emerge.

The first theme includes eight options, described previously, that are all based on a division of funds on a per resident basis, distributed directly to primary care programs (options I.A – I.H in Table 3). This set of options fulfills the criteria of being predictable, and are administratively feasible. They also allow for curricular autonomy and encourage primary care growth and development. Whether or not they hurt non-primary care programs depends on the source of funds. While this increased funding for primary care does not ensure higher quality residencies, well conceived guidelines for how the money is to be spent would help, at least to even the level of training at an acceptable quality. The principal stakeholders who would object to these options would be non-primary care educators, specialties, and residents. The strength of their objections would depend on whether the money to carry out these objectives is taken from the stakeholders' present funding sources or from new ones.

The second cluster of options is less favorable when viewed against these criteria. These include the alternatives of dividing the funds on the basis of competitive grants for primary care programs to use as each program determines, or for faculty, residents, the ambulatory site, curriculum development, the

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academic unit, increased resident ambulatory time, or for cooperative efforts between primary care residencies (options II.A – II.H in Table 3). These options fail in predictability, although this could be offset by setting the term of the grants as five years or more and by assuring a tapering period at the initiation and termination of the grant. They would also require significant start-up costs and a new or expanded administration to review grants, make site visits, dispense funds, and follow-up on their use. The ongoing costs of administration may also be significant. While the quality of some programs would certainly improve, not all primary care programs would receive grants and thus, a greater discrepancy in quality than currently exists could develop. Depending on the source of funds, both primary care and non-primary care educators, specialties, and residents may object to these alternatives. However, a more limited program of competitive grants, superimposed upon a program of basic payment for all programs, would be more popular and would likely stimulate improved training in primary care.

The third cluster of spending options appears less feasible. These consist of those alternatives which provide a system of incentives for primary care education and corresponding disincentives for non-primary care education (options III.A–III.H in Table 3). These fulfill few criteria, have significant administrative requirements, and would depend entirely on a set of criteria that would need development. In addition to educators, specialties, and residents (in both primary care and non-primary care), teaching hospitals could be expected to object to most of these alternatives as yet another set of regulations with which to comply and a potential loss of funds for their residencies.

Summary

The growth and development of graduate medical education in primary care has been hindered by current financing mechanisms. The alternatives discussed in this paper would attempt to rectify the situation. Criteria by which policy makers may judge funding alternatives have been proposed. These include financial, administrative, and educational implications of the options. The views of interested stakeholders also need to be considered, since many of the options would affect more than primary care educators and residents. We believe that no single remedy will be sufficient; instead, several solutions will be needed simultaneously. Judged against the criteria proposed here, our preferred options for raising money for primary care graduate medical education are as follows:

- Adopt a Resource Based Relative Value Scale for payment of physicians and improve coverage of outpatient services.

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- Include residents' primary/ambulatory care time in the calculation of resident FTEs for Medicare direct and indirect medical education payment, add incentives for primary care training in direct payments, and recalibrate payment per resident to maintain budget neutrality.
- Increase state support through Medicaid participation in payment for GME and through grants for primary care education.
- Require participation in payment for GME by other payers, including HMOs and private insurors, coupled with a surcharge or tax on revenues of non-teaching hospitals.
- Increase and redistribute Title VII funding for faculty development, curriculum design and other innovations. Encourage foundation support for similar purposes. Faculty development, in particular, should be allowed a separate funding stream.
- Experiment with programs to commit residents to future employers, who in turn would support primary care GME.
- Experiment with a direct medical education subsidy for outpatient payments to complement payment to hospitals to cover the costs of medical education. Consider an indirect adjustment to compensate for the higher cost of practice (e.g., overhead, more severely ill patients) in teaching settings.

The spending options we judge best would involve division of the funds on a per resident basis to residencies in internal medicine, pediatrics, and family medicine for the development of primary care curricular elements through faculty support, resident support, ambulatory site costs, curricular support, academic unit costs, increased ambulatory time, and primary care cooperative efforts, or to use as the individual residency chooses. This base funding would be coupled with competitive grant funding to stimulate innovation and faculty development. In addition, the appropriate and designated use of Medicare direct payments should be enforced by HCFA.

RECOMMENDATIONS FOR FURTHER ANALYSIS

1. A sensitivity analysis should be applied to all options to consider how the effects might change if the definition of primary care is changed to include only general internal medicine, general pediatrics, and family medicine; or if it were to be broadened to include geriatrics, occupational medicine, obstetrics-gynecology, and/or preventive medicine.

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2. A calculation of the amount of funds being discussed in each case is beyond the scope of this paper. The IOM Committee may want to support a study to determine these amounts.
3. With most options, a mechanism for preserving quality non-primary care residencies needs to be adopted.
4. More options for both raising money and for spending for primary care may need to be considered than are presented here. One means of obtaining the most relevant options, especially for spending, might be to conduct a survey of primary care program directors to solicit their opinion on the components of their programs that are the most difficult to fund.
5. Since few options fulfill all criteria, and few fulfill the criterion that all who benefit from GME should pay for it, the IOM committee should consider combinations of two or more compatible options.
6. The criterion of "sufficient" funding needs to be defined. Most, if not all, of the options proposed may need an adjunct mechanism to fulfill the requirement of adaptation to the changing nature (and cost) of primary care education.
7. The IOM Committee to Study Strategies for Supporting Graduate Medical Education in Primary Care should investigate the costs of administering the current system of GME financing. The present requirement that teaching hospitals collect time and effort reports from faculty to estimate the cost of GME is unvalidated, time-consuming, and subject to interpretation and gaming. A more efficient, equitable system should be feasible.
8. Two methods of changing GME financing to benefit primary care training should be evaluated. The first would involve options that redistribute GME funds to bolster payment for ambulatory care education, and would thus support not only primary care programs but all specialty training programs with an important outpatient component. The second method would seek those options that are specifically targeted to aid primary care training. If the latter is preferred, the IOM Committee should evaluate each option for source and expenditure of funds in light of how well it specifically helps primary care programs.

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Table 1 Criteria for Evaluating Alternative Proposals for GME Financing

Financial

1. The proposal should be neutral for the federal budget.
2. All those who benefit from GME in primary care should contribute to its costs.
3. Funding should be predictable.
4. Funding should be sufficient.

Administrative

1. Implementation should be feasible.
2. Ongoing administration should be simple.
3. Ongoing administration should be inexpensive.

Educational

1. Curricular autonomy and flexibility should be maintained.
2. Primary care curricular elements should be fostered and developed.
3. High-quality programs in non-primary care specialties should not be adversely affected.
4. Incentives should favor high-quality primary care programs.

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Stakeholders

1. Society
2. Federal Government
3. HCFA
4. State Government
5. Private Payers
6. Teaching hospitals
7. Non-teaching hospitals
8. Physicians
9. Primary care specialties
10. Non-primary care specialties
11. Primary care educators
12. Non-primary care educators
13. Primary care residents
14. Non-primary care residents
15. Patients

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Table 2 Alternatives for Sources of Funds

Changes in Existing Medicare GME Payments	
1.	Eliminate Part A direct and indirect payments
2.	Eliminate Part A direct payments
3.	Eliminate Part A indirect payments
4.	Reduce Part A direct payments
5.	Reduce Part A indirect payments
6.	Limit Part A direct and indirect payments to first certification
7.	Add incentives and disincentives to Part A direct payments
Increase in Categorical GME funding	
8.	Increase Medicaid
9.	Mandate or encourage payments for GME payments by insurors and HMOs
10.	Impose a tax on physician services
11.	Impose a tax on non-teaching hospital services
12.	Impose a tax on third party payers
13.	Impose a surcharge on physician licenses
Increase in Ambulatory Payment	
14.	Adopt Resource Based Relative Value Scale
15.	Extension of outpatient insurance coverage

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16. Adopt a Medicare Part B teaching adjustment to ambulatory sites
17. Allow resident billing including cost of supervision

Increase in Grants

18. Foundations
19. Title VII residency support
20. Title VII faculty development grants
21. VA support
22. State grant support

Commitment from Future Employer

23. HMO's
24. States
25. HRSA
26. National Health Service Corps

Redistribution of Funds

27. Redistribute Title VII money
28. Redistribute clinical income within teaching hospitals and faculties

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Table 3 Alternatives for Expenditures

I. Divide funds on a per-resident basis
A. Use as each primary care residency chooses or, targeted for;
II. Divide funds on the basis of competitive Grants
B. Primary care faculty
C. Primary care residents
D. Primary care outpatient site(s)
III. Divide funds on the basis of incentives for primary care education of residents
E. Primary care curriculum
F. Primary care academic unit
G. Increased ambulatory time for primary care residents
H. Primary care cooperative efforts

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FINANCING PRIMARY CARE RESIDENCY TRAINING EXAMPLES AND LESSONS FROM SUCCESSFUL PROGRAMS

Robert A. Walkington

Introduction

The past decade has been a time of ferment in American medicine. The career of the physician beginning practice in the 1990s will differ significantly from that of the physician who began practice in the 1970s. One major difference will be the greater extent to which that practice is conducted in an ambulatory setting.

This change has led many people to conclude that the traditional reliance on the hospital as the site of graduate medical education (GME) must be modified to include an increased emphasis on ambulatory care. This conclusion has been strengthened by the changes occurring in the nature of hospital utilization which has made the hospital a less satisfactory site for the educational experience, particularly for the primary care physician (AAMC, 1987; New York State Council on Graduate Medical Education, 1988; Gastel and Rogers, 1989).

These factors have led a number of groups and individuals to recommend strengthening the ambulatory care experience in general internal medicine, general pediatrics, and family practice residency programs. For example, the report of the New York State Commission on Graduate Medical Education stated:

> "The Commission therefore recommends that the graduate medical education of specialists in general internal medicine, general pediatrics, general obstetrics/gynecology and family medicine should include an appropriate balance of outpatient and inpatient experience".

The Commission went on to state that "a significant part of residency training should take place in ambulatory care settings." (New York State Commission on Graduate Medical Education, 1986).

Similar conclusions and recommendations were reached by the Council on Graduate Medical Education (COGME) which in its 1988 report to the Secretary of DHHS recommended "... a concerted emphasis on training in ambulatory settings ..."This recommendation was based on the Council's conclusion that GME in ambulatory settings is increasingly necessary in many specialties for optimal training and preparation for practice (Council on Graduate Medical Education 1988b). Similar views have been expressed by Ebert and Ginzberg (1988), by

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participants in the conference on Medical Education in the Ambulatory Setting (Stanford 1987) the Health Resources and Services Administration (HRSA) Conference on Primary Care Medical Education (1988) and in a number of recent articles (Moore, 1986; Perkoff, 1986, 1988; Kosecoff, et. al. 1987, Schroeder, 1988).

While there has been general (though not unanimous) agreement on the desirability of increasing the ambulatory focus of graduate medical education, particularly for the primary care specialties, there are a number of practical barriers to implementing changes. One of the major barriers is how to finance this new (or in the case of family practice, continuing) emphasis on ambulatory based education.

The Council on Graduate Medical Education concluded that:

> "There are difficulties in financing GME in ambulatory setting, related to lower levels of payment by third parties and to increased logistical problems in teaching. The current financing of GME results in disincentives for ambulatory training ... The financing of GME is particularly problematic for the areas of primary care, geriatrics and preventive medicine" (Council on Graduate Medical Education, 1988).

In a recent draft position paper, the Association of Program Directors in Internal Medicine (APDIM) recommends major changes in financing internal medicine training programs in ambulatory care. The paper declares: "A major obstacle to the development of educational programs in ambulatory care has been the failure of the payment system to fully compensate for the educational costs of post-graduate training in ambulatory settings". The HRSA Conference on Primary Care Medical Education concluded that "the limited reimbursement for primary care services and teaching have seriously constrained the success and growth of primary care education and the production of appropriately trained primary care physicians" (HRSA, 1988).

A recent article on family practice residency programs concluded that ambulatory care training suffers from the twin problems of lower revenues and higher costs (Ricketts et al., 1986). Similarly, in a presentation to COGME's Graduate Medical Education Programs and Financing Sub-Committee, Dr. Frederic Berg stated that "there is poor support for ambulatory education in pediatrics." To remedy this problem he recommended that "any new system of financing GME should provide support for training of residents in ambulatory settings including outpatient units and HMOs as well as inpatient settings" (COGME, 1987a).

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In addition to urging increased use of the ambulatory setting for GME most commentators have described problems with the current financing of GME which inhibit such use.

This paper, which first reviews the major problems in financing primary care education in ambulatory settings, describes some programs that have succeeded in making the needed shift in the site of training, and draws lessons from the experiences of the programs.

Problems With Current Financing of Ambulatory Primary Care Education

There is general agreement that it is more difficult to finance ambulatory primary care GME than inpatient GME but less agreement on whether this is caused by higher costs, a financing system tilted in favor of education in the hospital setting, inefficiencies in the delivery of services and education in the ambulatory setting or some combination of factors. Boufford in a recent article identified the most important issue as the "fundamental financing of ambulatory service and education". She states that "patient care revenues appear to be the major source of support for ambulatory care teaching, though they clearly are not sufficient to cover costs". This is attributed to the fact that while third-party payors include education costs as part of their reimbursement for inpatient services they are much less willing to do this for outpatient services (Boufford, 1989).

John Kasonic identified key sources of current and future support of GME in the ambulatory setting as patient revenues, governmental subsidies (for both teaching and indigent care), grants, university general funds, and "networking with traditionally non-teaching providers". He believes that the majority of financial support will continue to come from patient care revenues and that the adequacy of such financing will depend on improving the economy and efficiency with which the ambulatory settings operate (in terms of patient care and education) (Kasonic, 1987).

Watt (1987) identifies sources of financial support for GME as patient care funds, direct federal support for education, and direct educational support by state and local governments. He lists a number of problems in the current financing of GME in the ambulatory setting. These include more restrictive policies concerning payment for ambulatory services by third-party payors, the need to rely on "soft and fragmented funding sources, and the fact that new managed care systems have "little economic margin to support the costs of medical education".

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Family practice residencies provide insight into financing ambulatory focused primary care GME, since over half of a family practice resident's experience is in an ambulatory setting. The most recent survey of the costs and financing of family practice residencies (conducted in 1982–83) indicated that the largest source of support was the hospital, followed by professional fees from faculty and residents and state support. Other sources of support include federal and private grants, non-program managed support and institutional base support (Colwill, undated).

Colwill sums up the situation with regard to financing of residency education in family medicine as follows:

> "First, revenues from primary care are limited. Second, family practice centers in which family practice residents spend at least one-third of their residency in their continuity practice provide an added cost to the residency program. Consequently, the funding of family practice residency programs has been precarious and has been dependent upon governmental support in addition to hospital and patient care income support." (Colwill, undated).

The problems that family practice has faced are similar to those that will be faced by other residency programs as they attempt to expand the amount of time devoted to ambulatory focused education.

Published Examples of Successful Financing of Ambulatory Based GME

Most of the published reports of successful primary care programs have focused on educational content and process. Articles on financing have dealt largely with the problems of the current system and with proposed solutions. Two recent exceptions are an article by Rosenblatt (1988) and a report from the Association of American Medical Colleges (1987). While neither focused primarily on the financial aspects of programs, both discussed fiscal considerations.

In addition to these studies, some other articles describe solutions to problems which are at least partially under the control of the institutions or which propose solutions which are feasible without major restructuring of the current system. Moore (1988) speculates that in the future HMOs will become involved in medical education because of "..... their social responsibility, their practical self-interest, and their desired satisfaction." He believes that as the HMO movement grows and matures a number of HMOs will see that graduate medical education is in their self-interest. If self-interest is considered in its broadest sense then all three reasons are related to benefits that the ambulatory patient care setting will receive by supporting GME. In another recent article, Moore states that increased

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efficiency of ambulatory education and increased revenue from reimbursable services are the best ways to successfully finance ambulatory education. The same article makes the point that if it can be shown to have benefits for them, HMOs and voluntary faculty can be successfully involved in ambulatory education (Moore, undated).

Rieselbach and Jackson (1986) advocate linking ambulatory based GME to care for the indigent. They argue that such a linkage (through capitation) "would allow students, residents, and fellows to receive their clinical education in an environment in which the quality and cost of care would be controlled and supervised ..." The residents and fellows would provide care to the indigent under faculty supervision and in return the states and or the federal government would pay for the services and education under a capitation scheme.

Kosekoff, et al. (1987) in an article on the efficiency and cost of general medical ambulatory care in teaching hospitals conclude that major increases in efficiency are possible through improved management, including the development of more sophisticated information systems. The authors also suggest the development of stronger incentive systems to link efficiency and performance to financial rewards. In another article, based on the evaluation of the same general internal medicine clinics, Brook, et al. (1987) urge linking the ambulatory education experience to providing care to the underserved. They state that "the key to making this educational and patient care system work will be aggressive fiscal management, ...". A 1985 study of the Primary Care Unit at St. Louis University Medical Center reported that "revenues recovered was limited by low productivity and collection rate." The authors recommended that efforts be made to receive credit for ancillary profit and to improve provider productivity (Miller, et al., 1985).

Delbanco and Calkins (1988) suggest a number of approaches to increasing the efficiency of ambulatory teaching. The recommendations which deal with structure of the educational experience are designed to "maximize patient visits while achieving teaching goals."

Rosenblatt (1988) studied five exemplary programs finding that with fiscal creativity ambulatory programs could be successfully financed in a wide variety of ways. He found that efficiency increased as education was merged into the service function. "The more the teaching setting resembles a real world operation, the lower the teaching costs." In addition, leadership and institutional commitment were critical. Rosenblatt believes that there is enough money in the health care

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system to support expanded primary care education. However, current educational patterns provide cheap labor for inpatient services and subspecialties and reward those currently in control.

The ambulatory programs studied by Rosenblatt included two primary care residencies - general internal medicine at Brown University and an ambulatory pediatric residency at the University of North Carolina. In both cases institutional support and commitment were key to success. Each of the programs was ..." in harmony with the broad educational and services mission of its medical school." Also important was the fact that the programs were seen as beneficial - providing as well as consuming resources. Speaking of the North Carolina program Rosenblatt notes:

> "Critical to the program's fiscal integrity is that the community-based care is supported entirely by the sponsoring agencies, and the salaries of the agencies' professional staff are not supplemented by the Department of Pediatrics. These agencies see the incorporation of physicians as sufficiently valuable and stimulating to compensate for the extra time and potential lost productivity involved in teaching." (Rosenblatt, 1988)

The Association of American Medical Colleges studied nine academic health science centers with successful ambulatory programs. The study found the presence of a strong leader (initiator) "to create a climate that will accept and support ambulatory care education..." to be a key variable. The report also identified the importance of institutional and departmental commitment to ambulatory education. While over all institutional commitment was important, lacking it, institutional neutrality, combined with departmental commitment could lead to success. As the report noted:

> "Where school wide efforts are not underway, or where particular departments are not used as role models for change, the role of the department chairman ... is immensely important." (Association of American Medical Colleges, 1987)

While this study found that ambulatory programs could succeed financially in the current system it is important to note that seven of the nine academic health science centers required extra-institutional money (AHEC funds, foundation or federal grants, specific state appropriations) to begin their ambulatory initiatives. The report also concluded that the ability of the project to put together a package of financial support from a number of different sources was an important determinant of success:

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> "The financing used by the programs visited consisted in each instance of an apparently delicate idiosyncratic configuration of donated time and space; faculty patient care revenues; explicit local, state or federal grants and contracts; physician fee income; and occasionally funded research." (Association of American Medical Colleges, 1987)

Finally, in a presentation to the AAMC Symposium on Adopting Clinical Education to New Form and Sites of Health Care Delivery John Kasonic recommends increased operational efficiency and improved management - including coordinated planning, improved accounting systems, and improved management information systems as necessary for the successful financing of ambulatory care education program (Kasonic, 1987).

Other Examples of Successful Financing

Despite the array of problems identified by many observers, as the last section indicated some programs have succeeded in overcoming the barriers that make the provision of GME in ambulatory settings difficult. This section describes additional programs that have been successful in financing ambulatory focused primary care GME. The purpose is to provide insights that may be useful to other programs and to determine what changes in current financing systems may be necessary if more programs are to be successful in financing ambulatory primary care GME.

Because these programs were identified as being successful in doing what is generally conceived of as difficult they are by definition atypical. They were identified through review of the recent literature on primary care and discussions with knowledgeable individuals. Because of the limited time available only a few of the successful programs could be investigated. Exhibit 1, lists other programs reported to be successful in financing ambulatory based primary care GME.

1. The McLennan County Family Practice Program - Waco, Texas

The McLennan County Family Practice Program has been in existence for 20 years. The program was created following a series of meetings between members of the medical society and community leaders to address two problems—lack of health care for the indigent and the aging of the primary care physicians in the area. Initial funding for the program was essentially the same as is currently in place and discussed in some detail below. The program is operated by two nonprofit boards (one composed exclusively of physicians and one of physicians and community leaders) with some overlap of membership and close coordination

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between the two boards. Two boards were created because Texas law does not allow nonphysicians to hire physicians, and because a board composed only of physicians would not provide for needed representation or support from community leaders.

The program, located at the free-standing Family Practice Center, is affiliated with two local hospitals and with Baylor University College of Medicine. The residency program is three years in length, has a total of 24 positions (GY1:8) and has succeeded in filling all the positions offered in the residency match. In addition to the residency program, the boards operate a grant-funded faculty development center and a drop-in clinic. Faculty for the residency program includes five FTE family practitioners, one pediatrician, one OB/GYN, an internist and a psychiatrist on a part-time basis. In addition, extensive teaching time is volunteered by practicing physicians in the community.

The operating budget for the residency program is over $3.3 million (including revenue from the walk-in clinic but excluding the grant-funded faculty development center). The largest source of revenue is patient care, with billings in 1988 of $3 million, and $1.6 million in collections. A staff financial counselor can enroll patients for Medicaid and other forms of state support on site. In addition to Medicaid and Medicare patients, who account for 30% to 40% of patient revenue, the clinic cares for patients with private insurance who provide 10% of revenues. A sliding fee scale is used for indigent patients. The clinic aggressively pursues collections, which have increased by 20% in each of the last several years. Program administrators expect patient revenue to be an increasingly important source of support, but improved patient volume and billings have accounted for only a small part of the recent increase in patient revenues. The major part results from improved collections and billing from third-party payors.

An unusual, and apparently successful, incentive plan is used to increase patient care revenues. Clinic administrators predict patient revenues based on historical trends. Increases above this amount are shared between the program and the employees on a 50/50 basis. Each employee receives the same amount. This system is described as being good for morale and effective in improving the quality of paperwork.

The second largest source of revenue is the City of Waco. The program currently receives $840,000 per year from the city to care for medically indigent residents. Payment is not fee-for-service, but is based on historical analyses of services provided to city residents. The program in effect functions like a city department, receiving 12 monthly payments per year. This arrangement has been

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in place since the beginning (sometimes with county funds augmenting city resources) and has provided a stable source of support.

The program also receives $358,000 a year from the Texas Coordinating Board for Higher Education. This is a capitated payment from the state for each resident in an accredited family practice program. The payment was originally $15,000 per resident but overall funding by the legislature has not kept pace with the growth of programs in the state so has fallen to approximately $14,000 per resident.

The program receives a total of $373,000 from the two community hospitals with which it is affiliated. Each hospital pays the salaries of 1/3 of the residents in the program with the remaining third paid by the clinic. The program provides the only residents at each hospital and the hospitals provide the sites of the resident' inpatient experience. The final major source of support is Baylor College of Medicine which provides about $220,000 per year, largely for faculty salaries.

Most of the major sources of support have provided stable financing over the years. However, because of the deteriorating economic situation in Texas, only patient revenues have increased during the last two years. And this latter increase is largely attributable to improved third—party collections.

The keys to the success of this program include active boards, very good relationships with the medical and business/political community, and multiple sources of funds. It has been important that the program is perceived as a benefit to the community and to the various providers of funds. The patients perceive they are receiving good care, the city has its indigent care problems solved, the hospitals receive physician coverage (as do local physicians who provide significant voluntary teaching services) and Baylor has the opportunity to help solve physician manpower problems in Texas (90% of program graduates practice in Texas, two-thirds practice in areas with a population of 25,000 or less).

The program is always on the alert for innovative sources of funds. Currently it is working with the city to see if long-term bond funding might be a viable alternative to annual city appropriations. The program currently receives a federal grant support of $58,000 for curriculum development in community based primary care. This small grant support sum was described as being very important in making program modifications and improvements, e.g. curriculum development, redesign of geriatric curriculum, improvement of documentation of residency activities.

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The program director claims that no major financial problems exist. The fact that their financial supporters believe they receive benefits from the program, combined with the support of two non-profit boards and a generally positive community image have all been important factors in developing long-term, stable financial support.

2. Montefiore Medical Center Residency Program in Social Medicine; Bronx, New York.

The Residency Program in Social Medicine (RPSM) provides the organizing structure for primary care residencies in internal medicine, pediatrics and family practice. The three residency programs are organizationally distinct but benefit from the economies of scale of joint activities. The RPSM has a conjoint faculty which provides the behavioral, social and educational design components to all three programs. The program in internal medicine has 18 residency positions (GY1:); pediatrics has 12 (GY1:4); and family practice has 24 (GY1:8). Since neither family practice nor internal medicine filled all of their positions this year there will be only six first-year residents in family practice and four in internal medicine. Pediatrics is expanding to six first-year residents. The program director in internal medicine believes there are several reasons for this, first, failure to fill positions through the National Resident Matching Program. Reasons include a decline in interest in the social aspects of medicine, an increasing tendency for medical schools to retain their graduates for their own residencies, and a breakdown in the program's recruiting work with medical school counselors.

This description focuses on internal medicine but also provides some information on the other two programs. The program director describes the internal medicine residency as "aggressively ambulatory" and "pushing it (ambulatory based education) to the limit" when compared with other programs in internal medicine.

The program in social medicine (designed to train physicians to serve the urban poor through clinical practice, teaching, research or public policy leadership roles) was organized in 1970 with a grant from the Office of Economic Opportunity (OEO) and included residents in pediatrics and internal medicine. In 1968, Montefiore Medical center opened the Martin Luther King Health Center with an OEO federal grant. Because the medical center had trouble in finding appropriately trained physicians to practice in that setting they requested and received a further grant from the OEO to start the residency programs. When OEO support was discontinued it was replaced by the Robert Wood Johnson Foundation, whose support was in turn replaced by Public Health Service (Title

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VII) Grants. In 1974 the program was expanded with a federal grant to include family practice.

Between 1974 and 1978 all three residency program had their ambulatory experience at the Martin Luther King Health Center, and financial support came from grants, the hospital and the health center (in return for services provided by the residents and faculty). By 1978 family practice accreditation standards had changed to require that the family practice program be a separate department. The family practice program therefore set up its own community health center and left Martin Luther King. At the same time the grant to the Martin Luther King Health Center was transferred from the hospital to a community board, and the Health Center began experiencing severe financial problems because of reduced federal support. The Health Center ceased support of the residency program. Thus in the late 1970s and early 1980s only hospital and grant support were available. By 1982 concern over the stability of federal grants led to renegotiation with the community board and renewed support from the Martin Luther King Center. However, Health Center financial problems, as well as the community board's attitude that they should not support education, worsened until the program in internal medicine had to move its ambulatory site to newly renovated space in the out-patient department at St. Barnabus, a small community hospital ten blocks north of the Martin Luther King Center.

The internal medicine program currently receives financial support from three main sources 1) a $150,000 federal grant 2) $250,000 from St. Barnabus for services provided by faculty and residents 3) Montefiore Medical Center. This latter is the largest source and pays residents' salaries. The program director believes that inpatient and outpatient services provided by the resident, and the reimbursement the hospital receives for medical education through Medicare direct and indirect payments, probably compensate both Montefiore and St. Barnabus fully for their budget support.

A significant factor in funding is state Medicaid reimbursement for ambulatory care. Article 28 of the New York Medicaid Statute authorizes institutional provider rates for qualified institutions. The state determines costs for each institution and then the institution can bill on an average per-visit cost. The per visit cost at the ambulatory clinic at St Barnabus is $55. At the family practice Community Health Center it is $80. This reimbursement is said to be sufficient to provide quality care, break even in a teaching setting, but not to cover the administrative costs of the educational programs or the support of nonrevenue generating faculty.

The program has been successful in maintaining financial viability for an extended period of time. That the program has a specific mission has contributed

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to its ability to develop a dedicated staff in spite of relatively poor salaries, and has helped in getting grant support. The state Medicaid system has allowed the program to break even on ambulatory services activities. Combining three programs under the umbrella of the Residency Program in Social Medicine has allowed the programs to share costs of planning, program development, administration, and recruitment of shared staff in areas such as the social and behavioral sciences. The integration of the three programs has other benefits. For example, when federal funding (Title VII) was not available for internal medicine, New York State support of family practice prevented the loss of shared behavioral science faculty. In addition the clustering of programs with like social goals has enriched each. And finally the leadership of the overall medical center has been willing to provide long-term support for the program.

3. State University of New York at Buffalo, - Family Practice, Buffalo, New York.

SUNY-Buffalo has a large family practice residency program with 60 positions (GY1–20 expanding to GY1–24 in 1989–90). The ambulatory component is operated from four separate family practice centers (two urban, one suburban, one small city). Offering residents a choice of site is seen as helping in recruitment. In 1988 the program filled 10 of 20 positions in the National Resident Matching Program, and filled the other 10 with domestic graduates (dropouts of other types of residencies, osteopathic graduates, etc.).

Revenues come from three major sources, 1) federal and state grants (10% – 15%), 2) hospital support (50% – 55%) and 3) faculty practice plan (approximately 35%). New York State provides $15,000 for each family practice resident, and the Department of Family Practice also has four federal grants. While only one grant is specifically for residency support they all strengthen the department and increase resources. These federal grants are not large, but they are described by the department chairman as supporting activities and individuals that are difficulty or impossible to fund in other ways. Examples include nonrevenue generating faculty and staff (social workers, education specialists, etc.), administration and coordination support personnel, and research associates.

Area hospitals pay about half the costs of the total program - funding residents and some faculty salaries in return for inpatient services. This funding is similar to that found in most GME programs.

The third major source of financial support is the faculty practice plan. Revenue is generated at the four family practice centers and twelve faculty-staffed ambulatory sites that were developed in conjunction with local hospitals. These

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twelve sites are new or recently remodeled, and are used to train medical students, and for a mandatory one month urban or rural rotation for the residents. The faculty sites provide admissions to the hospitals, generate revenues and faculty income, and serve as a pool from which localities recruit physicians.

A major reason for the programs financial success is the way the state Medicaid reimbursement system operates. While New York Medicaid pays only $10 to $12 for a physician's office visit it has an institutional provider rate - currently in the $70 – $80 range for most institutions in the Buffalo area. With this level of reimbursement the hospitals can utilize faculty physicians at the ambulatory sites, the residency program is supported, and a reasonable quality of care is provided to the poor and everyone (except possibly the physicians in private practice) appears to be satisfied.

The residency programs are described by the department chairman as being well financed. In fact, significant expansion of the program could be supported. The hospitals are anxious to have more faculty clinics and there is a need for more family practitioners in the Buffalo region. The major deterrent to expansion, and the major current and future problem, is lack of interest by medical students and residents in primary care and family practice. According to the chairman, there appears to be a lack of interest in serving people. It is not clear whether poor reimbursement, large educational debt, or changing societal values are causing decreased interest in primary care.

A number of factors have contributed to growth of the program: direct state support, and even more importantly, indirect support through reimbursement levels that enhance the faculty practice plan. In addition, in the early to mid 1980s, Buffalo was significantly over-bedded and hospitals discovered that association with primary care providers can increase or protect market shares. This, coupled with the availability of funding and the insight to the department chairman, led to the organization of the Department of Family Medicine Family Faculty Associates which could meet the needs of the hospitals, provide stable funding for the program and serve as a recruitment device. The program as it expanded has been able to serve large numbers of indigent patients in faculty clinics and in nursing homes. This has led to increased political support for family practice in the state legislature as well as local political goodwill.

It is also important that SUNY-Buffalo is the only medical school in a geographic region of some 2 1/2 million people. This results in strong local loyalties on the part of physicians, politicians and the community. Although New York State has the largest number of residents in the nation, the residencies are concentrated down state and in non-primary care specialties and do not provide competition.

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The program has created a win-win situation. All the major players in the system appear to be benefiting and therefore will continue to support the family practice residency program.

4. Florida's Medically Indigent Demonstration Projects

Unlike the first three examples, the Florida Medically Indigent Demonstration Projects are new. They are also unusual in that they represent efforts by the state and three of its medical schools (the University of Miami, the University of Florida and the Southeastern University of Health Sciences) to develop projects that explicitly link care for the medically indigent, medical education, and manpower issues (both recruitment and distribution).

In 1984 the state legislature enacted a tax on hospital beds to help finance indigent care. In 1987 the legislature authorized use of a portion of the funds generated by the tax to support two medically indigent demonstration projects (one rural, one urban) "to link the provision of primary health care services to low income persons with the education of medical students, interns, and residents." (Florida, 1987) In 1988 the law was amended to add a second rural demonstration project.

Currently the state legislature is considering a bill that would use the three demonstration projects as the basis of a state-wide Area Health Education Center Network (AHEC) operated by the four state medical schools (The University of Miami, The University of Florida, The Southeastern University of health Sciences and The University of South Florida). Each school would be responsible for a service area jurisdiction in which it would coordinate the recruitment, retention and training of medical student, residents, and interns as well as other health profession students. The legislation would also authorize the medical schools to "utilize current community resources such as departmental county public health units, federally supported primary care centers and other providers of primary health care as community based sites for training of medical students, interns and residents" (Florida, 1989). The bill calls for an annual appropriation of up to $6 million dollars.

The governor opposes the bill on the grounds of cost. The state Department of Health and Rehabilitation Services and several key legislators support the bill. While it is not clear what will happen, the best estimate seems to be that the three demonstration projects will continue to be funded at their current level of $1 million each for another year. There is also interest in making the demonstration projects part of permanent legislation (rather than being incorporated into the

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annual appropriations bill) and changing the funding source from the Public Medical Assistance Trust Fund (hospital tax) to general revenues.

The original demonstration legislation (passed in 1987) was strongly championed by two state legislators interested in health issues and particularly care for the indigent. One of these legislators was also strongly supportive of the AHEC concept based on exposure to the state-wide AHEC in North Carolina. The demonstrations were also advocated by the AHEC directors from the University of Miami and the Southeastern University of Health Sciences. Much less interest was expressed by the two other medical schools in the state.

a) University of Miami

The medical school has used the demonstration grant to establish community based ambulatory residency experiences in internal medicine, family medicine, pediatrics and obstetrics and gynecology at community health centers. The amount of time spent in the community health center by the residents varies, being greatest in family medicine and least in OB/GYN.

Developments in internal medicine provide some detail on how the program has evolved. The director of the internal medicine grant was frustrated by the large indigent inpatient load which he believed increasingly distorted the educational experience. He was simultaneously facing grant renewal problems while trying to integrate the primary care focus into the large overall program in internal medicine (total positions 118; GY1–45). The solution that the program director decided was most viable was to convert the entire program to general internal medicine. He was able to convince the various groups and individuals involved (the Department of Medicine, Jackson Memorial Hospital, the Veterans Administration Hospital) that such a change would create a stronger overall residency program in internal medicine. At about the same time a federal grant cycle for AHEC funding was announced and the University of Miami (under the leadership of the Department of Medicine) applied for and received a grant. The AHEC grant has been important not only because it provided additional funds for decentralized educational activities but because it 1) provided longer term support than the training grant, 2) had a multidisciplinary focus and 3) created a permanent organizational structure.

The state demonstration project provided a third major source of funds and an additional impetus for development of the increased community/ambulatory focus for internal medicine residency activities. The specific ambulatory experience in internal medicine that is made possible by the state grant is one month in a community health center. The majority of the funds from the demonstration project funds have been used to hire contract physicians to staff the

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emergency room. The project director said that "it is our impression that our residents have more than enough emergency room experience in their current rotations" (Fournier, 1989). Demonstration funds have freed residents from some of their hospital responsibilities, which allows time for the ambulatory block experience. This is in addition to the continuity experience at either Jackson Memorial Hospital or the Veterans Administration Hospital. The entire residency program meets the federal 25% continuity requirement. Some 50% of the residents are said to go into primary care - up from 30% a few years ago.

Overall, the project is described as making good progress. There has been opposition from more traditional members of the Department of Medicine and there was also some initial resistance from the residents caused more by scheduling changes than from the increases ambulatory experience. Some changes and accommodations have been made and residents are now said to be supportive of the program's focus. Key participants at the school, without whose support the change could not have taken place, were the dean, the chairman and vice chairman of the Department of Medicine, the chairman of Family Medicine and the AHEC director.

A major factor in the success of the program was the availability of sufficient money from several sources, which increased flexibility. For example, since the federal training grant is not use to support resident's salaries, residents need not sign a Statement of Intent to Practice General Internal Medicine. In this way the program can expose all of the internal medicine residents to primary care and an expanded ambulatory experience.

Timing was also said to be critical - many individuals were becoming concerned over the inadequacy of the inpatient experience for graduate medical education. According to the AHEC Director all of the trends occurring nation wide (huge service loads, sicker inpatients, non-representative patient conditions) are compounded in Miami. The combination of a major problem, the availability of new and flexible resources, and an individual with an idea created significant opportunities.

Impediments to implementation were described as two-fold — achieving consensus and getting people to make the agreed upon changes. Other problems include financial viability of the demonstration grants and long-term support for education in the ambulatory setting. It is hoped that this latter goal can be achieved through the development of capitated plans to serve the medically needy. Such a plan for the Jackson Memorial Hospital Clinics was negotiated with the state Medicaid Program and initiated in January of this year. The school is also negotiating with Dade County for a capitated system to serve medically needy county residents and hopes to initiate it later this year.

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b) The Southeastern University of Health Sciences

The Southeastern University of Health Sciences (until recently known as the Southeast College of Osteopathic Medicine, SECOM), like the University of Miami, has received a $1 million Medically Indigent Demonstration Project Grant for the past two years. In addition, the State, through the Community Hospital Education Council, supports selected residencies. The Council pays $14,000 a year for family medicine residents, lesser amounts for other primary care residents including OB/GYN, and selected psychiatry residents. The SECOM project is a rural demonstration involving medical students and residents. While the University of Miami project is focused on shifting the site of training from inpatient to outpatient and from hospital clinic to Community Health Centers, the SECOM project is different. Because the osteopathic residency program already has a heavy ambulatory focus the SECOM project is aimed more at expanding the number of ambulatory sites and shifting some of the ambulatory training to rural areas.

The 16 SECOM general practice residents will have a required two-month ambulatory block in a rural site this year and a three-month block next year. The school is also attempting to start a fully rural based residency program. The demonstration project is operated at four sites—two rural community health centers, a rural county health department and a school-operated AHEC site. Although the community health centers and county health units are said to be very supportive, the local rural hospitals are less so. Grant funds are used in a variety of ways; half time support of faculty at each site, partial support of resident stipends, support for a Medical Director who is shared by the sites, living and transportation expenses for the residents, and library and audio visual resources.

From the start the project was actively supported by SECOM administration without significant opposition. A Vice President of the Southeastern University of the Health Sciences, who is also a state legislator, was instrumental in having the legislation approved. According to the project director the residents support the project and look forward to the expanded program next year.

The major concern expressed was about future funding. The SECOM administration support legislation that would use the demonstrations as the base for a state-wide AHEC. However, given the financial problems of the state and the governor's opposition, they are not optimistic that the legislation will be approved.

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c) University of Florida

The University of Florida Medical School received a medically Indigent Demonstration Project grant in 1988. The Dean of the medical school subcontracted (approximately $200,000) with the Center for Health Policy Research for the initial research and planning tasks—develop an agenda, conduct community needs assessments, review the literature on retention of physicians and develop optimal program models. According to the director of the center, most of this work has been done, and he and the dean will meet with the representatives of the four primary care departments to discuss to what degree they wish to be involved in the project.

While the exact nature of the educational experience has not been decided, it will probably include both medical students and residents, be a block experience, and be conducted at two sites (a small non-tertiary care hospital and a county health department). As currently conceived, grant funds would be used to pay for student and resident travel and housing, individuals to serve as preceptors at the sites, and the conduct of both an ongoing and a final evaluation.

The director of the Center for Health Policy Research indicated that the University of Florida was very skeptical about the project because of its demonstration nature. Without permanent funding the university did not want to become involved in an activity that might raise community expectations and leave the University with an unfunded commitment. He indicated that the University of Florida sees its major health care commitment to be the operation of a tertiary care hospital. He also described the state's financial problems and the fact that the Public Medical Assistance Trust Fund would be broke next year.

d) Summary

The rapid development of the projects at the University of Miami and the Southeastern University of Health Sciences can be attributed to the compatibility of the state's ideas with needs perceived by the medical schools. The state was concerned with adequate staffing for health departments and community health centers and with recruiting replacements for National Health Services Corps physicians as they finish obligated service. The medical schools were interested in expanding the sites of, and securing funding for, an ambulatory based educational experience. The fact that several key legislators were interested in health issues and that there were individuals at the two schools anxious to make changes were also critical factors in program development.

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5) North Carolina - AHEC Program

North Carolina has a long history of support for higher education and health, particularly primary care. The following events illustrate the continuing statewide effort to improve the health of the states citizens. When the University of North Carolina-Chapel Hill Medical School, was expanded to four years after WW II, the authorizing legislation required that it concern itself with manpower distribution in the state. In the mid 1960s the university created an Office of Community Medical Care within the medical school. In 1967 the legislature appropriated $1 million for community outreach activities to be directed by this office. Also in the late 1960s the medical school created a Department of Family Medicine. In the early 1970s the university took the lead in developing a statewide AHEC program based on the ideas of the Carnegie Commission report (calling for the decentralization of a significant portion of the undergraduate medical education program) and aided by substantial federal funds. The philosophy of the AHEC program includes a multidisciplinary approach to health care and health professions education. The program supports not only undergraduate and graduate medial education but also health profession education in nursing, dentistry, pharmacy, public health and allied health. The state in 1974 authorized grants to primary care residents in the state. Today there are 300 resident grants of $15,000 each through a state appropriation to the AHEC. The grants are allocated to the four medical schools and to the state AHEC sites having residency programs. Currently the state is the major source of funds for the AHEC, providing approximately $30 million (including the $4.5 million for primary care residents). A significant portion of the total AHEC budget is used to support faculty and facilities at the nine AHEC sites around the state. It should be noted that decentralizing the educational process is not necessarily the same as increasing the focus on ambulatory education. While there is significant ambulatory education at the AHEC sites majority of education is still conducted in the inpatient hospital setting.

Currently the state is concerned about responding to the twin challenges of the shift of the setting of health care delivery to locations outside the hospital and the declining interest of medical students and residents in primary care. In North Carolina, in 1988 44% of the first-year residency positions in Family Practice were unfilled by the match - as compared with less than 10% in each of the previous three years.

Acknowledging the complex nature of these problems the medical school and the state-wide AHEC have concluded:

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> "This combination of circumstances is creating profound difficulties for medical education which will require a dramatic shift in the setting of medical education and in the nature of faculty supervision of the individual medical students if it is to be overcome" (North Carolina AHEC, 1988).

The AHEC, in association with the four schools of medicine, has proposed to the legislature a full scale state-wide planning effort beginning this year. The plan would be completed in about one year. Significant state funding for implemention would start in late 1990. While the major focus is on increasing the ambulatory content of undergraduate education, significant attention will also be paid to primary care GME.

The plan is designed to build upon the past success and reputation of the AHEC program. It ties the educational needs of the schools to the manpower and service concerns of the public and the legislators. It is important that the four medical schools are united in the effort and have the AHEC structure and its reputation as an honest broker to serve as a vehicle for change. Other important factors include a history of generous state funding for higher education (within the top three nationally on a per capita basis), knowledgeable and politically astute leadership within the AHEC program, and several key legislators who are supportive of primary care.

The major problem in selling the new plan is to tie it to the overall AHEC concept, and the need to ensure adequate availability of care for all - including the indigent. The current move to ambulatory care education has arisen within the medical schools, not the community, making it necessary to relate the proposed program to issues which concern state legislators and the general population.

6. Medical College of Wisconsin - Pediatrics, Milwaukee, Wisconsin

Medical students and the 42 residents (GY1:14) in pediatrics from the Medical College of Wisconsin receive their ambulatory experience in the Pediatric Primary Care Clinic (PPCC) of Childrens Hospital of Wisconsin. Throughout their three years, residents spend one half day a week obtaining continuity experience in the PPCC, as well as block time in both their first and second years.

Until 1984 the PPCC was a typical hospital clinic staffed by hospital personnel and faculty from the Medical College of Wisconsin. There was ongoing friction between the faculty and hospital administration over finances and management. Hospital studies showed net losses by the clinic of $401,000 in 1981 and $512,000 in 1982. Additional problems, according to the hospital, included

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the fact that faculty were more interested in research and education than the efficient provision of care, thus productivity was low and faculty billings and collections were inadequate. The hospital also claimed that although it did not have financial responsibility for education, by running the clinic with a deficit the hospital was indirectly supporting both undergraduate and graduate education. The faculty was also unhappy, charging that hospital operations were poorly run, that the claimed losses were more bookkeeping artifacts than reality (shifting hospital inpatient costs to the PPCC), and that in return for services provided by faculty and residents the hospital had an educational responsibility.

During this time of discontent the state of Wisconsin announced that all patients receiving medical care under the State Aid to Families with Dependent Children (AFDC) would be enrolled in HMOs. Since this population provides the bulk of both inpatients and outpatients at the hospital and the PPCC, and since with the current operational structure services were not competitive, both the hospital and the faculty were faced with a major problem. The solution was for the hospital to form an "HMO, called Total Care to serve as a home for AFDC/MA patients followed at the PPCC and by private physicians who used Childrens Hospital ... the PPCC became a faculty managed, prepaid group practice under the Department of Pediatrics". The group then contracted with the hospital HMO to provide health care on a capitated basis for members selecting the PPCC and contracted with the hospital to pay for clinic space and housekeeping services.

According to the medical director of the PPCC and the Chairman of the Department of Pediatrics, the changes have been very successful. Most of the friction between the faculty and the hospital has disappeared. The costs, particularly personnel costs, have been sharply reduced. Continuity of care, and the educational process have been improved.

Although the PPCC is viewed as a financial success, there is still some concern over costs. The faculty believe that the hospital should continue to pay the educational subsidy that it had paid for the first 18 months. Success is seen as resulting both from improved operational efficiencies and the system of capitated payments. The medical director believes that they can provide quality care and education at a cost which is competitive with an IPA though not with a staff model HMO.

Key factors contributing to success include a situation requiring action, strong leadership within the department and the interest and commitment of a medical director willing to devote time and energy to making the system work. It was also critical that the capitated system provide a sure source of revenues (approximately 80% of revenues come from the capitation payments). The medical director commented "Capitated care does make the process simpler and (assuming

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capitation rates are adequate) possible. Fee-for-service reimbursement would require subsidies from some other source" (Torphy, 1989).

The medical director is concerned that his managerial role takes him away from research opportunities which are more highly esteemed in academic settings. He is also concerned that the need to run the clinic in an economic and efficient manner may take away from the educational mission in the long run (though it has not done so up to this time). The Department chairman believes that the faculty's experience in running an ambulatory clinic is transferable to other settings and that a faculty run system provides a better educational experience and reduces friction between faculty and hospital administrators. He also believes that the fact that faculty and residents have to worry about costs is all to the good.

D. Lessons for the Future

Successful financing of ambulatory-based graduate medical education is as uncertain and confusing as anything else related to the cost and financing of graduate medical education. Given the uncertainty over costs and financing it is not surprising that it is difficult to find examples of successful programs. In attempting to identify programs with either innovative or strong and stable financing I received a variety of responses ranging from "are you delusional?" and "there aren't any" to a program director who, in describing the financial situation of his program, commented "we have so much money I don't know how to spend it intelligently." While this latter response was less typical than that of the AHEC director who said, "I moan and groan and cry a lot" it was not unique. Although many programs with a significant ambulatory focus have financial problems, others appear to be successful. A variety of factors contribute to financial success and stability.

Table 1 indicates factors that appear to have been important in the success of the programs described in this section. Table 2 briefly defines each of the factors. The absence of a "x" mark in Table 1 means that the factor was not mentioned, not necessarily that it did not exist. A minus after the "x" means that the factor was described as important but not critical or that it was important at some time but not continuously.

It is evident that many of the factors were important in each of the successful programs. This does not necessarily mean they were of equal importance, indeed the individual cases indicate some factors were much more important than others.

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Table 1 Factors Loading to Successful Financing of Ambulatory GME

Progress Person	Probles	Leadership	Institutional Commitment	Management Skills	Goal/ Mission	Multiple Funding Sources	Mutual Benefits	Merged With Service	State Support-Direct	State Support-Indirect	Federal Private Grants
McLennon Texas	X	X	X	X	X	X	X	X	X	X	X
Montefiore	X	X	X	X	X	X	X	X		X	X
SUNY-Buffalo	X	X	X Dept.	X	X	X	X	X	X	X	X
Florida	X	X	X				X		X		
Miami	X	X	X	X	X	X	X	X	X	X	X
SECOM	X	X	X		X	X	X	X	X	X	X
Univ. of Florida									X		
North Carolina AHEC	X	X	X	X	X	X	X	X	X	X	X
Wisconsin	X	X	X Dept.	X				X		X	

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Table 2 Definitions of Factors

1. Problem - the existence of a problem, either critical or chronic which required significant changes in a program.
2. Leadership - the presence of an individual willing to accept responsibility for making changes.
3. Institutional Commitment - the willingness of the institution to support or encourage the change. In the case of states it refers to a general climate of support.
4. Management Skills - the presence of someone, or several people, with the skills necessary to ensure the project operates economically and efficiently.
5. Goal or Mission - the existence of a clearly articulated outcome or desired end result of the activity.
6. Multiple Sources of Funding - the presence of at least three independent financing sources.
7. Mutual or Compatible Benefits - the congruence of interests between the project and the sources of financial support.
8. Merging of Education with Service - the ability to merge the educational experience into the provision of services.
9. Direct State Support - the availability of state funds directly for use in educational programs.
10. Indirect State Support - the availability of state resources for the provision of services which therefore indirectly assist the educational goal of the project. In the case of the McLennan Texas project the indirect support was from local government.
11. Federal/Private Grants - the presence of grant funds designed to support primary care education.

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A problem; the existence of a serious problem appears to be a prerequisite for the development of a successful program. None of the cases developed simply from the desire for a better mouse trap. In each instance there was a significant problem that was not being addressed or an impending crisis that could not be handled by the current system. The problems varied: a potential loss of the patient base in Wisconsin, the impending retirement of physicians in Texas, the need for a new type of physician at Montefiore, and the health of the state's citizens in North Carolina. But in each case it was thought that there was a need for a major change in current programs or the creation of a new ambulatory based education program.

Leadership; a leader is needed who has a concept and is willing to push for its implementation. This person needs to have both entrepreneurial and charismatic traits which can be used to mobilize disparate scarce resources. Another important aspect of the leadership role is persuasion. In most instances it was necessary to convince both the overall institutional leadership, and in many cases outside financial sources, that the ambulatory focus will be in their long-term best interest.

The presence of strong leadership with a clear goal was a critical element in the success of the programs described in this paper. In each of the cases discussed, an individual (a department chairman, a residency program director, a medical director of a clinic) was identified as being key to the success of the program. While achieving agreed upon concensus concerning institutional direction appears necessary, it is inadequate unless a leader has a strong commitment to change.

Closely related is the need to have a specific goal. The program at Montefiore was described by its director as being aggressively ambulatory. The program in Texas recruits residents who will remain in its area to practice primary care. In all of the programs studied, individuals could clearly articulate the goals and objectives of the program.

External leadership can also prove helpful. The interviews as well as the literature contain numerous examples of how a state legislator, member of the University Board of Regents or some other "outside" source facilitated financing and acceptance of a new concept. In both North Carolina and Florida individual legislators played significant roles in gaining approval for an activity. While this external support cannot substitute for internal leadership it can help overcome opposition and create a supportive climate. To some degree grant support - either federal or private - can also provide external validation and impetus. North

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Carolina was adept at using its Federal AHEC contract to justify its actions and to deflect criticism by more traditional medical school faculty.

While dynamic leadership can facilitate the accomplishment of many of the tasks associated with establishing ambulatory care residencies, one function of leadership is to garner institutional support - a vital element that is discussed next.

Institutional commitment; ambulatory based programs are most easily implemented and sustained if they fit into the natural environment of the overall institution. Lacking this fit, leadership attempting to establish residencies in ambulatory care settings will have to fight institutional resistance to a reallocation of resources, and overcome an institutional structure that lacks incentives for individuals to encourage education in ambulatory settings. A number of people, including federal policy makers, policy analysts, and program directors said that commitment not resources was the key issue. As one federal official commented "The issue is not money, but marshalling resources and institutional commitment. Leadership in the medical center has to be willing to make changes". Similar comments include: "The support of the [hospital] for primary care and its willingness to pay resident salaries is crucial." "Institutional leadership is critical in obtaining financing." In at least four of the cases described here there was significant institutional commitment to the concept of primary care. In the other two cases, Buffalo and Milwaukee, there was strong departmental support and commitment.

Management skills are critical to the operational efficiency needed to control the costs of new residency arrangements. Several people interviewed mentioned that improving the current operation of hospital clinics would be a significant step in helping finance ambulatory based GME. As one hospital consultant commented: "There isn't any new money available, the key is restructuring ambulatory services to make them more efficient and effective."

Faculty takeover of the operation of a hospital clinic does not necessarily mean that efficiency will improve. Ensuring efficiency is a difficult and time consuming task that requires tact, determination and commitment. Both the PPCC in Milwaukee and the increased success in collection and the incentive plan at the family practice clinic in Waco provide examples of the importance of efficient management.

Financial resources are by definition necessary to achieve financial stability. The cases described in this section and those previously described show that if the leadership and institutional support are present the current financial system can,

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in at least some cases, be adequate to provide ongoing support for ambulatory educational innovations.

A number of the key factors interrelate. The successful programs all had multiple funding sources, the program leadership had convinced a number of organizations and individuals that they would benefit from the ambulatory based education program, frequently because of the value of the services being provided by the residents. All of the programs had merged the educational aspects of the program with successful service delivery activities, and state and federal funding had played important roles.

All of the successful programs had at least three major sources of support - most had significantly more. Shared financial support may also lead to shared commitment, and on a very practical level, not putting "all your eggs in one basket" means that the program's director has greater flexibility. The cases provide several examples where loss of one financial source could be overcome by increasing support from another source.

Mutual benefit can be an important factor in success. That is, the program needs to be able to convince groups or institutions with different objectives that support of ambulatory education will be mutually beneficial, that it will generate ancillary services and inpatient revenue for the hospital, help the state or locality provide care for its indigent population at reasonable costs, help recruit future staff to community health centers, provide physicians for rural constituents of a key state Senator, or some other similar related or compatible interest.

Obviously patient care revenues have been, and continue to be, a key ingredient in financial viability. Thus the level of payment from government and private payers is crucial to financial viability, and is a significant factor in the uncompensated care burden that the program shoulders. Almost all, of the successful programs developed well-run ambulatory operations. In the projects reviewed, efficiently conducted ambulatory services coupled with government payments for indigent care were a key ingredient in the program's financial success.

In many ways the state is a key player in determining financial viability. There are limited comparative data on state support for medical education - particularly clinical education. The most extensive recent information is contained in "State Support for Clinical Education" (Mandex, 1987). Tables 3 and 4, taken from that report, show types of clinical education supported and state support for

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Table 3 Types of Clinical Education Support (Number of States - 481)

OPERATING SUBSIDIES ONLY	DIRECT SUPPORT ONLY	BOTH	NO SUPPORT
Hawaii	Arkansas	Alabama	Alaska
Missouri[2]	Arizona[3]	California	Massachusetts
North Dakota	Delaware	Colorado	Montana
New York[2]	Idaho	Connecticut	New Hampshire
Utah	Indiana	Florida	Rhode Island
Oregon[4,2]	Nevada	Georgia	
	Oklahoma	Illinois	
	South Dakota	Iowa[2]	
	Tennessee	Louisiana	
	Vermont	Minnesota[2]	
	Washington	Mississippi	
	West Virginia	Nebraska	
	Wyoming	North Carolina	
	Michigan	New Jersey	
		Kansas[2]	
		Kentucky[2]	
		New Mexico[2]	
		Ohio	
		Pennsylvania	
		South Carolina	
		Texas	
		Virginia[5]	
		Wisconsin	

1 Insufficient data on Maine and Maryland to classify these two states.
2 Data not available.
3 Arizona discontinued its operation subsidy to the University Hospital.
4 Clinical support for hospital in appropriation to medical school.
5 Part of support is in medical school budget.
SOURCE: Mandex, Inc. (1987), Issue Paper #2. State Support for Clinical Education.

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Table 4 STATE SUPPORT FOR FAMILY PRACTICE, 1986

	Clinical Medicine	Family Practice	
State	Total $	$	%
Alabama	3,341,000	2,480,000	74
California	2,800,000	2,800,000	100
Colorado	2,142,000	2,142,000	100
Connecticut	34,000	34,000	100
Georgia	4,812,000	4,812,000	100
Idaho	50,000	50,000	100
Indiana	4,533,000	1,000,000	22
Iowa	1,383,000	1,383,000	100
Minnesota	168,000	168,000	100
Ohio	12,006,000	7,236,000	60
Oklahoma	5,805,000	2,715,000	47
Tennessee	3,940,000	3,808,000	97
Texas	10,875,000	7,875,000	72
Virginia	3,261,000	3,261,000	100
Wisconsin	5,390,000	5,390,000	100
West Virginia	1,643,000	458,000	28
Wyoming	8,386,000	8,386,000	100
Total	$119,182,000	$53,998,000	45

SOURCE: Mandex Inc., (1987), Issue Paper #2. State Support for Clinical Education.

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family practice. Since these tables do not include state programs which indirectly facilitate but are not targeted at education, the amount of state support is probably understated.

State support can be direct or indirect. Direct support can include grants for specific projects, as in Florida and North Carolina; it can include payments for residents in primary care programs, or it can include direct payments to support the medical school faculty or to subsidize a teaching hospital. States have also played an important role in supporting primary care residencies by providing direct subsidies. Family practice has been especially successful in using local project directors to obtain direct state support - particularly where the legislature is dominated by representatives of rural areas. One faculty member commented: "Rural legislators see support for our (FP) residency programs as an insurance policy against losing their local doc."

The amount and method by which the state pays for indigent care can also be important in the development of ambulatory education. This support can be explicit, as where education is included as a component of the Medicaid payment or it can be a secondary result of a state policy. Both the Montefiore Social Medicine Program and the SUNY-Buffalo Family Practice programs receive extensive indirect support for education because of generous Medicaid reimbursement for institutional providers of ambulatory care. Some states such as California, New York, and Massachusetts, fund ambulatory care for the poor by providing adequate reimbursement for their care through hospital clinics. This revenue contributes to the support of residents in these setting. Some studies show that the services provided by residents can offset the costs of their education in well-run settings. However, this can only occur if payers provide adequate reimbursement.

The federal government also plays an important role in supporting residencies. Overall Medicare payments are the major source of support for graduate medical education. In almost every case discussed in this paper the hospitals associated with the residency programs contributed funds for residents' salaries. Much of this support is possible because of the indirect and direct medical education payments made by Medicare.

Direct federal grant programs have also been important, particularly in the initiation phase of programs. A 1987 evaluation of federally funded primary care residency programs (both internal medicine and pediatrics) concluded that the federal grant support had been essential for the initiation of these residency training programs and the support of the behavioral science curriculum (Health Resources and Services Administration, 1987). Interviews with program directors

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for this paper produced similar responses. Because the training grants are directed toward the support of primary care education they do not have to serve a dual purpose (such as the support of services). For the same reason they are valuable in supporting parts of the residency program which do not produce revenue, for example, the conjoint faculty at Montefiore or the curriculum redesign at the McLennan County program in Texas. Because they can be used for planning and development activities the grants are also of obvious use in initiating a new program.

Family practice programs that have been successful in establishing strong, stable, financial support for ambulatory-focused graduate medical education provide some lessons for other specialties. Although their success is in part due to their longer involvement in ambulatory care residencies—an involvement that is required by Accreditation Requirements—a more detailed study of their programs would be valuable.

Examples from the literature and the case studies indicate that some other differences between family practice residencies and other residencies may account for the former's greater financial success in the ambulatory setting. The fact that they are frequently the only residency program in a hospital may make them a more valuable resource to the hospital. Similarly their locations in community hospitals and in less urban areas may have contributed to their greater success in convincing state legislators that they are a valuable resource, and thus to their greater success in securing direct state support. The necessity of securing financial support from a variety of sources may have aided in building coalitions and in generating non-monetary support. Finally, since the basis of family practice is ambulatory, it is likely that most department chairmen (a key ingredient in success) will be strong supporters of the programs.

Summary

Overall the examples presented confirm the previous findings in the literature. However, we found that a large number of factors (See Table 1) must come together if a program is to be financially successful. Most of the successes reported previously identified only a few key factors relating to financial viability. Factors that received greater attention in the programs described in this paper than in the literature included the existence of a specific problem, the need for a single leader with a clear goal, and the role of the state. Other factors described in the literature, such as efficient management, multiple funding sources, merging of education with service functions, development of services to benefit others, were also important to the success of the programs we studied.

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Exhibit 1

Other Examples of Successful Financing:

In addition to the programs described in this paper, a number of other states, schools and departments were reported to be successful in terms of having or supporting stable long-term funding for ambulatory based primary care graduate medical education. These include:

a) States

Washington; specifically for state support of family practice and for the WAMI (Washington, Alaska, Montana, Idaho) system overall.

South Carolina; for the support of family practice and the development of a state-wide primary care network.

Arkansas; for support of primary care education through its AHEC network.

b) Medical schools reported to have a general interest in ambulatory care education include:

Rush Medical College
Bowman Grey School of Medicine
University of California, Los Angeles, School of Medicine
Michigan State University College of Human Medicine
Southern Illinois University School of Medicine
University of Minnesota Medical School
Texas Tech University Health Science Center School of Medicine
West Virginia University School of Medicine
University of Utah School of Medicine

c) Residency programs reported to have long-term stable financing and a significant ambulatory component.

Internal Medicine
University of California, Los Angeles School of Medicine
Beth Israel Hospital (Boston)
Brigham and Womens Hospital Program (Boston)
Brown University/Rhode Island Hospital

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Family Practice

Memorial Family Practice (Long Beach, CA) Santa Monica Family Practice (Santa Monica, CA) Lancaster Family Practice (Lancaster, PA)

Pediatrics

Harvard Medical School Program

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