COUNCIL ON GRADUATE MEDICAL EDUCATION

Twentieth Report

Advancing Primary Care

DECEMBER **2010**

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The views expressed in this document are soley those of the Council on Graduate Medical Education and do not necessarily represent the views of the U.S. Government.

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The Council on Graduate Medical Education

The Council on Graduate Medical Education (COGME) was authorized by Congress in 1986 to provide an ongoing assessment of physician workforce trends, training issues, and financing policies and to recommend appropriate Federal and private-sector efforts to address identified needs. The legislation calls for COGME to advise and make recommendations to the Secretary of the Department of Health and Human Services (DHHS); the Senate Committee on Health, Education, Labor, and Pensions; and the House of Representatives Committee on Commerce. Since 2002, COGME has been extended through annual appropriations. The legislation specifies 17 members for the Council. Appointed individuals are to include representatives of practicing primary care physicians, national and specialty physician organizations, international medical graduates, medical student and house staff associations, schools of medicine and osteopathy, public and private teaching hospitals, health insurers, business, and labor. Federal representation includes the Assistant Secretary for Health, DHHS; the Administrator of the Centers for Medicare and Medicaid Services, DHHS; and the Chief Medical Director of the Veterans Administration.

CHARGE TO THE COUNCIL

The charge to COGME is broader than the name implies. Title VII of the Public Health Service Act, as amended, requires COGME to provide advice and recommendations to the Secretary and Congress on the following issues:

1. The supply and distribution of physicians in the United States;
2. Current and future shortages or excesses of physicians in medical and surgical specialties and subspecialties;
3. Issues relating to international medical school graduates;
4. Appropriate Federal policies with respect to the matters specified in items 1–3, including policies concerning changes in the financing of undergraduate and graduate medical education (GME) programs and changes in the types of medical education training in GME programs.
5. Appropriate efforts to be carried out by hospitals, schools of medicine, schools of osteopathy, and accrediting bodies with respect to the matters specified in items 1–3, including efforts for changes in undergraduate and GME programs; and
6. Deficiencies in, and needs for improvements in, existing data bases concerning the supply and distribution of, and postgraduate training programs for, physicians in the United States and steps that should be taken to eliminate those deficiencies;
7. Encouraging entities providing graduate medical education to conduct activities to voluntarily achieve the recommendations of the Council as warranted; and
8. Development of performance measures, longitudinal evaluations and recommendation of appropriation levels for programs under COGME's charge.

In addition to providing advice and making recommendations to both the Secretary and Congress, the COGME shall also:

- Encourage entities providing graduate medical education to conduct activities to voluntarily achieve the recommendations of the Council.

COGME PUBLICATIONS

Reports

Since its establishment, COGME has submitted the following reports to the DHHS Secretary and Congress:

- First Report of the Council (1988);
- Second Report: The Financial Status of Teaching Hospitals and the Underrepresentation of Minorities in Medicine (1990);
- Third Report: Improving Access to Health Care Through Physician Workforce Reform: Directions for the 21st Century (1992);
- Fourth Report: Recommendations to Improve Access to Health Care Through Physician Workforce Reform (1994);
- Fifth Report: Women and Medicine (1995);
- Sixth Report: Managed Health Care: Implications for the Physician Workforce and Medical Education (1995);
- Seventh Report: Physician Workforce Funding Recommendations for Department of Health and Human Service's Programs (1995);

- Eighth Report: Patient Care Physician Supply and Requirements: Testing COGME Recommendations (1996);
- Ninth Report: Graduate Medical Education Consortia: Changing the Governance of Graduate Medical Education to Achieve Physician Workforce Objectives (1997);
- Tenth Report: Physician Distribution and Health Care Challenges in Rural and Inner City Areas (1998);
- Eleventh Report: International Medical Graduates, The Physician Workforce and GME Payment Reform (1998);
- Twelfth Report: Minorities in Medicine (1998);
- Thirteenth Report: Physician Education for a Changing Health Care Environment (1999);
- Fourteenth Report: COGME Physician Workforce Policies: Recent Developments and Remaining Challenges in Meeting National Goals (1999);
- Fifteenth Report: Financing Graduate Medical Education in a Changing Health Care Environment (2000);
- Sixteenth Report: Physician Workforce Policy Guidelines for the United States, 2000–2020 (2005);
- Seventeenth Report: Minorities in Medicine: An Ethnic and Cultural Challenge for Physician Training, an Update (2006); and
- Eighteenth Report: New Paradigms for Physician Training for Improving Access to Health Care (2007).
- Nineteenth Report: Enhancing Flexibility in Graduate Medical Education (2007)

OTHER COGME PUBLICATIONS

- Scholar in Residence Report: Reform in Medical Education and Medical Education in the Ambulatory Setting (1991);
- Process by which International Medical Graduates are Licensed to Practice in the United States (September 1995);
- Proceeding of the GME Financing Stakeholders Meeting (April 11, 2001) Bethesda, Maryland;
- Public Response to COGME's Fifteenth Report (September 2001);
- Council on Graduate Medical Education and National Advisory Council on Nurse Education and Practice: Collaborative Education to Ensure Patient Safety (February 2001);
- Council on Graduate Medical Education: What Is It? What Has It Done? Where Is It Going? 2nd edition (2001);
- 2002 Summary Report (2002).

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This report is the result of a collaborative effort by the members of the Council. The members of the Council's writing committee played a key role in drafting the recommendations and associated supporting material. To develop the report, the writing committee created two writing groups.

One writing group focused on the overall context for the report and the recommendations related to the ideal number of primary care physicians and primary care physician reimbursement. Members of this writing group included:

- Dr. Jerry Kruse, Chair
- Dr. Mark Kelley, Co-Chair
- Dr. Tom Keane
- Dr. Carol Pillinger
- Dr. Russ Robertson
- Dr. Vicki Seltzer
- Dr. Bill Thomas
- Ani Turner[1]
- Dr. Leana Wen

The other writing group focused on the recommendations related to primary care physician education (graduate and undergraduate) and primary care physician distribution. This group also focused on issues of management of educational debt and the role of mid-level providers. Members of this writing group included:

- Dr. Sheldon Retchin, Chair
- Dr. Robert Phillips, Co-Chair
- Dr. Denice Cora-Brambles
- Dr. Wendy Braund
- Dr. Joseph Hobbs
- Dr. Spencer Nabors
- Dr. Kendall Reed
- Dr. Russ Robertson
- Charles Roehrig PhD[1]
- Dr. Jason Shu
- Dr. Winston Liaw[2]

The two groups developed working papers to address their respective areas of focus. The writing committee, led by Dr. Robertson, then worked to develop a consolidated set of draft recommendations based on the work of the two groups. After the draft recommendations were developed, the committee worked to develop the draft report that supported these draft recommendations. This work was conducted over a series of conference calls and involved many hours of work developing sections of the report.

1 Ms. Turner and Dr. Roehrig are not members of the Council, but provided technical support to the writing groups as health workforce researchers with Altarum Institute.

2 Dr. Liaw is not a member of the Council, but assisted Dr. Phillips through his role at the Robert Graham Center.

Preface

This report has been written in and through a time of dramatic change in the health care environment in the United States. The beginnings can be traced to November of 2008 and coincident with the arrival of a new administration in Washington DC. Members were acutely cognizant of the role the Council could play in this process of health reform and so worked to emphasize past reports, particularly the 19th, Enhancing Flexibility in Graduate Medical Education, and expressed a desire to be consonant with the efforts that unfolded as the report was being written of which the capstone was clearly the new Affordable Care Act. Where appropriate, we have referenced the Affordable Care Act in our report as evidence of the Council's direction as well as citations from this legislation consistent with our recommendations. We also referenced the recent June publication of the Medicare Payment Advisory Commission's report to Congress entitled, "Aligning Incentives in Medicare" as evidence of the Council's work and desire to collaborate with another governmental entity where there is alignment with specific aspects of the Council's efforts. Last, we note the Secretary of Health and Human Service's new program, the Affordable Care Act Primary Care Residency Expansion (PCRE) Program. This is a $168 million, five-year program, aimed at increasing the number of residents trained in a primary care specialty (family medicine, general internal and general pediatric medicine). The program's purpose is to increase the number of primary care physicians by expanding enrollment in primary care residency programs. The new residency training positions must be **over and above** the number currently being trained, even if a program is already over its Centers for Medicare and Medicaid Services (CMS) authorized Graduate Medical Education (GME) cap.

ABSTRACT

As a result of a number of factors including compensation, practice environments, and experience in medical school, there is a shortage in the number of primary care physicians that is accelerating. At the present time, 32 percent of physicians in the U.S. are primary care providers, of which 12.7 percent are family physicians, 10.9 percent general internists, 6.8 percent general pediatricians, and 1.6 percent in general practice. In addition, a percentage of obstetricians/gynecologists serve as primary care providers, particularly among their younger female adult patients. While there are real shortages in general surgery and key pediatric and internal medicine subspecialties, the shortage in primary care providers, particularly those capable of caring for adults with chronic disease, overshadows the deficits in all other specialties. This shortage is especially critical in the context of health care reform objectives that have the potential of adding 32 million newly insured individuals that will only further increase the need for primary care physicians.

The current U.S. primary care physician workforce is in jeopardy of accelerated decline because of decreased production and accelerated attrition. A review of questionnaires administered to all 2008 allopathic and osteopathic medical school graduates revealed that only 17 percent chose any of the primary care specialties as their first choice. This decreased medical student interest in primary care is caused by multiple factors including the high workload and insufficient reimbursement of this field of practice relative to the earnings of many specialists. These factors, in addition to the "hidden curriculum" in many medical schools that actively discourages student interest in the adult primary care specialties, the lack of strong primary care role models, and dynamic practice environments in other specialties often absent onerous administrative requirements, contribute to the reluctance to enter primary care disciplines. This workforce is also in jeopardy because of the substantial reduction in the production of primary care physicians from graduate medical education. Expansion of subspecialty training options, loss of primary care training positions (especially in family medicine), and alternate career options (such as general internal medicine graduates choosing to work as hospitalists) have effectively reduced primary care production by one-third over the last decade. Additive is the overall aging of the current primary care workforce and its anticipated retirement, particularly should the economy continue to improve.

There is one essential caveat that should be addressed. While this report's emphasis is on the overall need for primary care physicians, it must be clearly stated that this reflects the need to increase the numbers of physicians capable of caring for adults and their associated chronic disease burden. This does not appear to be the case for general pediatrics. In fact, student interest remains high and has led to a surplus, relative to other areas of primary care, in the supply of general pediatricians. During the last decade, there have been increases in the numbers of medical students who are choosing general pediatrics. With regard to the supply of general pediatricians and in the context of this report, the major challenge is their geographic maldistribution. For example, in Idaho there are 32 general pediatricians per 100,000 children, whereas in the District of Columbia the ratio is 186.6 per 100,000.

The Council on Graduate Medical Education met in April and November 2009 and April 2010 to review the current environment and develop recommendations. The Council identified four challenges and developed five recommendations as presented in this report.

The challenges are:

1) The practice environment
2) The environment in medical schools
3) The graduate medical education environment
4) The geographic maldistribution of physicians in practice

Recommendations to address these challenges are presented in five categories:

1) The number of primary care physicians
2) Mechanisms of physician payment and practice transformation for primary care
3) The premedical and medical school environment
4) The graduate medical education environment
5) The geographic and socioeconomic maldistribution of physicians

EXECUTIVE SUMMARY

There is compelling evidence that health care outcomes and costs in the United States are strongly linked to the availability of primary care physicians. For each incremental primary care physician (PCP), there is 1.44 fewer deaths per 10,000 persons. Patients with a regular primary care physician have lower overall health care costs than those without one. In the U.S., primary care physicians are in short supply, particularly in certain regions of the country, as discussed in Section 1 of this report.

As a result of a number of factors including compensation, practice environments, and experience in medical school, there is a shortage in the number of primary care physicians, particularly those with the ability to care for adults and their associated chronic disease burden. This shortage is especially critical now in the context of health care reform objectives that will increase the need for primary care physicians. As a result of reform, as many as 32 million previously uninsured Americans will be eligible for coverage. Such an influx of previously uninsured and likely underserved individuals will undoubtedly increase the demand for primary care services nationwide.

At the present time, 32 percent of physicians in the U.S. are primary care providers, of which 12.7 percent are family physicians, 10.9 percent general internists, 6.8 percent general pediatricians, and 1.6 percent are in general practice. In addition, there are a percentage of obstetricians/gynecologists that serve as primary care providers, particularly among younger female adults. The current U.S. primary care physician workforce is in jeopardy of accelerated decline because of decreased production and accelerated attrition, as described in Section 1. Decreased production from graduate medical education is a reflection of the choices made by young physicians and by teaching hospitals that are associated with a growing income disparity between primary care physicians and other specialties. Over the last several years, a variety of policies have been adopted to reduce disparity and the new Affordable Care Act takes steps to reduce this disparity. Decreased medical student interest in primary care is caused by multiple factors including heavy workload, insufficient reimbursement, the hidden curriculum in medical school, and a lack of strong primary care role models. Declining reimbursement relative to specialties, increasing workloads, and associated administrative requirements contribute to accelerated attrition.

Attrition will also be augmented as the primary care physician workforce continues to age, currently averaging 47 years old. At the present, there are 242,500 primary care physicians in the U.S. and almost one quarter (55,000) are age 56 or older. The likelihood is that many of these physicians will retire within the next decade.

The Challenges

There is a shortage of primary care physicians in this country and that shortage is likely to worsen. The Council on Graduate Medical Education (COGME) reviewed four aspects of key challenges contributing to the shortage and approaches for addressing them. These include the practice environment, medical student experience, graduate medical education, and maldistribution of physicians.

- **Challenges in the Practice Environment:** In the practice environment, there are not enough primary care providers to serve the growing and aging U.S. population. Moreover, on average, compensation of primary care providers is less than 55 percent of the average compensation of other medical specialties. For this reason and others, primary care physicians are dissatisfied with their careers as compared to other physicians. Many are struggling with relatively low reimbursement rates, high overhead costs, and increasing burdens of complex care. The responsibility for coordinating all the patient's care also creates significant administrative burdens for primary care physicians; they face a number of certification and paperwork burdens associated with federal initiatives aimed at deterring fraud among durable medical equipment suppliers and home health agencies. When medical students are exposed to this practice environment through contact with primary care faculty members in medical

schools and community-based mentors, it has the effect of discouraging student interest in becoming a primary care physician, specifically among those caring for adults.

- **Challenges in the Medical School Environment:** The percentage of U.S. medical graduates choosing family medicine decreased from 14 percent in 2000 to 8 percent in 2005. These career choices are strongly shaped by the medical school experience. In U.S. osteopathic medical schools, graduating seniors' intent to pursue primary care dropped from 34 percent in 2001 to 29 percent in 2008.

One reason for this decline in interest levels is exposure to what has been termed the "hidden curriculum." During clinical training, medical students work shoulder-to-shoulder with residents, interns, and their supervising faculty. This is their first glimpse of the "real world" of medical practice where they are exposed to a disproportionate number of specialists. This is because most medical schools have, in one form or another, a faculty practice plan anchored to a large hospital that attracts unusually complex patients not representative of the general population.

- **Challenges in Graduate Medical Education:** Medical school deans and university presidents have traditionally been judged on their ability to build large medical research enterprises focused on discovery and innovation, truly laudable aspirations. Most academic medical centers focus on complex care to pursue these institutional goals, emphasize basic science and clinical investigation, and provide relatively greater rewards to those offering subspecialty care. In addition, many large hospitals have developed graduate medical education (GME) programs to support their complex care and are often more highly remunerative programs. The GME programs of these large teaching hospitals are effective in recruiting physicians to the medical staff and building subspecialty clinical care. This disconnect between meeting the needs of the population versus meeting the needs of the academic health center was the focus of an Institute of Medicine report in 1989 and has recently been an area of concern for the Medicare Payment Advisory Commission.
- **Challenges in the Maldistribution of Physicians:** Primary care physician geographic and socioeconomic maldistribution in the U.S. is a chronic public policy challenge. Despite persistent efforts to address the problem through various initiatives, approximately 50 million Americans live in health professional shortage areas (HPSAs).

RECOMMENDATIONS

The Council on Graduate Medical Education met in April and November of 2009 and April 2010 to examine these challenges and develop recommendations. The Council's review of the challenges and their recommendations are presented in this report. The recommendations are presented here in five categories. Analyses of these recommendations are detailed in the discussion sections of this report. The five categories are: the number of primary care physicians, mechanisms of physician payment and practice transformation for primary care, the premedical and medical school environment, the graduate medical education environment, and the geographic and socioeconomic maldistribution of physicians.

The recommendations are summarized below. The recommendations are designed to work in a complementary fashion, and in some cases, we suggest that implementation should be sequenced to maximize effectiveness. Mechanisms for payment to address compensation disparities should be implemented prior to improving capacity in the medical school and graduate medical environments. Recommendations for increasing the supply of primary care physicians should be implemented in parallel with recommendations for addressing maldistribution of physicians.

Preamble: Policies and programs should be implemented to enhance and support the practice of primary care, and to increase the supply of primary care physicians. Payment for physician services is biased in favor of hospital-based and procedural services and does not provide appropriate incentives to enhance and support the practice of primary care, or to increase the supply of primary care physicians. Policy changes should be dramatic to remedy these legacy biases and have immediate effect. COGME recommends against policies that favor slow and incremental change.

1. The Number of Primary Care Physicians

Recommendation: Policies supporting physicians providing primary care should be implemented that raise the percentage of primary care physicians (general internists, general pediatricians, and family physicians) among all physicians to at least 40 percent from the current level of 32 percent, a percentage that is actively declining at the present time. The achievement of this goal should be measured by assessing physician specialty once in practice, rather than at the start of postgraduate medical training.

Congress and the Department of Health and Human Services should:

1. Implement policies that raise the percentage of primary care physicians among all physicians to at least 40 percent.

2. Implement policies that increase the supply of physician assistants, nurse practitioners, nurses, and other staff positions necessary for coordinated, integrated practice in primary care teams.
3. Provide incentives and regulatory reform so that clinicians and staff have the opportunity to "work at the top of their degree" regardless of specialty or setting.
4. Encourage and support the roles of other physicians who provide comprehensive, longitudinal primary care.

Rationale: The current U.S. primary care physician workforce, critical to effective health care delivery, is in jeopardy of serious decline because of decreased production, accelerated attrition, and contraction of effort. There is a dramatic shortage of primary care physicians for adult care and a maldistribution among primary care physicians across the nation. Decreased medical student interest in primary care is caused by multiple factors including heavy workload and insufficient reimbursement. These same factors are leading to accelerated attrition from primary care practice. Additionally, the large cohort of physicians born between 1940 and 1960 is nearing retirement: in 2005 more than 250,000 active physicians were over 55 years old.

2. Mechanisms of Physician Payment and Practice Transformation for Primary Care

Recommendation: To achieve the desired ratio of practicing primary care physicians, the average incomes of these physicians must achieve at least 70 percent of median incomes of all other physicians, as discussed in Section 2 of this report. Investment in primary care office practice infrastructure will also be needed to cope with the increasing burdens of chronic care and to provide comprehensive, coordinated care. Payment policies should be modified to support both of these goals.

Congress, CMS, and private insurers should:

1. Address mechanisms to increase payments immediately to primary care physicians and practices. Such mechanisms should include:
   - Preferential increases in fee-for-service payments to primary care services. Institute further measures, such as the 2007 Centers for Medicare and Medicaid Services (CMS) implementation of the American Medical Association (AMA)/Specialty Society RVS Update Committee (RUC) recommendation to increase the work relative value unit (RVU) valuation. This will correct any inequities in the fee-for-service system and will provide higher payments for primary care services. The recently passed Affordable Care Act provides for a 10 percent bonus in Medicare payments for primary care practices that provide at least 60 percent of their services in primary care.
   - Financial rewards for care coordination in primary care practices. Dramatically expand payments for care coordination. Congress and CMS should expand Medicaid programs and institute Medicare programs with payments that appropriately reflect the true aggregate costs for care coordination to primary care practices that emphasize the four essential functions of primary care. Private insurers should institute similar care coordination payments to primary care physicians in primary care practices.
   - Financial rewards for improvements in performance measures. Authorize study of systems of pay-for-performance to ensure simplicity and to make certain that they are based on evidence that measures improvement of patients' symptoms, problems, functioning, resiliency, and slow progression of ill health.
2. Reward the Patient-Centered Medical Home (PCMH) financially when its physicians meet the four essential functions (first contact access, patient-focused care over time, comprehensive care, and coordinated care) and the three corollary functions (family orientation, community orientation, and cultural competency) and when measures of process and quality are met and improved. The PCMH should be supported as the construct for the practice environment that achieves optimal care coordination and integration, for use of health information technology, for enhanced access, and for appropriate payment. Study levels of funding necessary to sustain the PCMH model and its impact on costs in settings other than physicians' offices.
3. Implement payment models that bundle payments for full-service accountable care organizations and/or incentivize the development of community health care organizations that provide the four essential functions of primary care through collaboration of primary care physicians, public health, care coordination organizations, and mental health organizations.

Rationale: The current payment system contributes to several key challenges, including disincentives for students and providers considering primary care and a fragmented health care system wherein different providers provide care to a patient with little integration or coordination. Addressing these challenges would lead to improved outcomes and better containment of costs.

3. The Premedical and Medical School Environment

Recommendation: Medical schools and academic health centers should develop an accountable mission statement and measures of social responsibility to improve the health of all Americans. This includes strate-

gically focusing and changing the processes of medical student and resident selection and altering the design of educational environments to foster a physician workforce of at least 40 percent primary care physicians and a health system that meets societal needs, as outlined in Section 3.

Medical Schools and Academic Health Centers should:

1. Allocate resources to:
   - Increase and/or sustain the involvement of primary care physicians through all levels of medical training;
   - Support student primary care interest groups;
   - Recruit, develop, and support community physician faculty members; and
   - Require student participation in rural, underserved, and/or global health experiences.
2. Expand medical school class size strategically to address the primary care physician deficit and maldistribution issues.
3. Reform admission processes to increase the number of qualified students more likely to choose a primary care specialty and to serve medically vulnerable populations.
4. Recruit and retain underrepresented minority students and faculty members.
5. Require block and longitudinal experiences of sufficient length that medical students clearly understand the essential functions of primary care and the medical home.
6. Collaborate with local communities and distribute resident training accordingly, support reductions in physician income disparities, and lead in the development of new models of practice.

Medical Schools, Academic Health Centers, the Association of American Medical Colleges, American Association of Colleges of Osteopathic Medicine, the Liaison Committee for Medical Education, the Commission on Osteopathic College Accreditation, the Accreditation Council for Graduate Medical Education, the American Osteopathic Association, Congress, regulatory agencies, and licensing agencies should:

7. Reform the continuum of medical education, from premedical training through continuing education, to impart general competencies most efficiently and promote the choice of careers in primary care.

Federal and state governments should:

8. Provide increased incentives for physicians who practice primary care or other critical specialties in designated health workforce shortage areas.
9. Substantially enhance funding for scholarships, loans, loan repayment, and tuition waiver programs to lower financial obligations for students who plan and pursue careers in primary care.

Rationale: Students' future career choices are strongly shaped during medical school. While many students express interest in primary care when they first enter medical school, this interest may erode by the time they choose their graduate medical education specialty in their fourth year of training.

4. Graduate Medical Education

Recommendation: Graduate Medical Education (GME) payment and accreditation policies and a significantly expanded Title VII program should support the goal of producing a physician workforce that is at least 40 percent primary care, as discussed in Section 4. This goal should be measured by assessing physician specialty in practice rather than at the start of postgraduate medical training. Achieving this goal will require a significant increase in current primary care production from residency training and major changes in resident physician training for the practice environment of the future.

Congress, the Administration, Department of Health and Human Services, and accrediting agencies should:

1. Change regulations to support more training in outpatient settings and experimentation with practice models to prepare residents appropriately for an evolving contemporary health care environment.
2. Strategically increase the number of new primary care GME positions and programs to accommodate the increased production of medical school graduates and respond to the need for a workforce composed of at least 40 percent primary care physicians.
3. Increase training in ambulatory, community, and medically underserved sites by:
   - Promoting educational collaboration between academic programs and Federally Qualified Health Centers (FQHCs), rural health clinics (RHCs), and the National Health Service Corps (NHSC);
   - Implementing new methods of funding to include reallocation of existing GME funding, new GME funding that is not calculated according to Medicare beneficiary bed-days, and substantial expansion of Title VII funding specifically for community-based training. The Affordable Care Act authorizes increased funding for Community Health Centers beginning in FY 2011.
4. Provide financial incentives for GME that:
   - Directly provide GME funding to primary care residency programs, educational consortia, or non-

hospital community agencies to provide the proper incentives for ambulatory and community-based training;

- Explore augmenting payments for primary care residents, including differentially higher salaries and early loan repayments, to decrease the negative impact of educational debt on primary care specialty choice;
- Fund all primary care residency programs at least at the 95th percentile level of funding for all programs (using total direct medical education (DME) and indirect medical education (IME) payments as a basis); and
- Reward teaching hospitals, training programs, and community agencies financially on the basis of the number of primary care physicians produced, to be determined by specialty in practice and not at the initiation of training.

Rationale: Graduate medical education is central to development of the workforce. Federal policies are needed to redesign GME to meet existing challenges. There are opportunities to improve training paradigms to respond adequately to the primary care physician workforce deficit, which could be further exacerbated by elements of health care reform.

5. The Geographic and Socioeconomic Maldistribution of Physicians

Recommendation: So long as inequities exist, policies should support, expand, and allow creative innovation in programs that have proven effective in improving the geographic distribution of physicians serving medically vulnerable populations in all areas of the country, as discussed in Section 5.

Congress and the Administration should:

1. Ensure funding of the National Health Service Corps at the $1.15 billion amount authorized by the Affordable Care Act so that the NHSC can recruit more primary care physicians, provide greater support of scholarship recipients, create special learning opportunities and networks for scholarship recipients and early loan repayers, and forge formal affiliations with academic institutions and training programs.
2. Increase the funding for Title VII, section 747, to $560 million in Primary Care Medicine and Dentistry cluster grants.
3. Implement programs to increase funding by the Agency for Healthcare Research and Quality (AHRQ), National Institutes of Health (NIH), and private research enterprises for projects that stimulate primary care and community-based research and emphasize methodologies such as population-based ecological and cluster studies, qualitative behavioral studies, and comparative effectiveness research.
4. Increase funding for Community Health Centers (CHCs) that are committed to training students and residents, and increase funding for Area Health Education Centers (AHEC) programs to improve existing programs, support new programs, and support innovative funding proposals that promote the practice of primary care in medically underserved areas.

Rationale: Primary care physician maldistribution in the U.S. has been a long-standing and persistent challenge in spite of recurrent attempts to ameliorate it with targeted physician workforce and health care financing policies as well as undergraduate and graduate medical education programmatic interventions.

Introduction

There is compelling evidence that health care outcomes and costs in the United States are strongly linked to the availability of primary care physicians [1,2,3,4]. For each incremental primary care physician (PCP), there are 1.44 fewer deaths per 10,000 persons [2]. Patients with a regular primary care physician have lower overall health care costs than those without one [5,6]. In the United States, primary care physicians are in short supply, particularly in certain regions of the country [7].

The Institute of Medicine's Definition of Primary Care

"Primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."

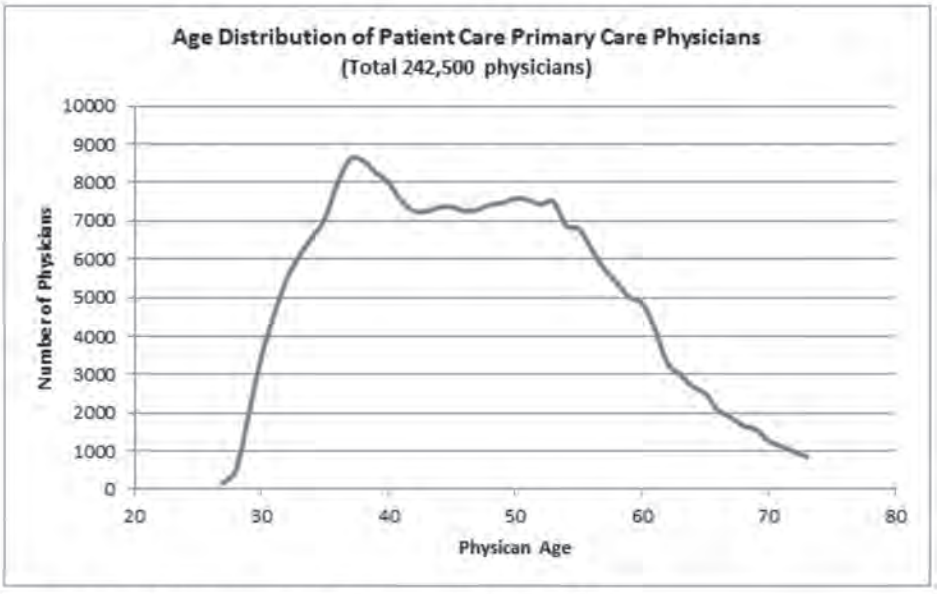
(Donaldson, Yordy, Lohr, & Vanselow, Committee on the Future of Primary Care, Institute of Medicine, p. 31, 1996)[8]

The supply and distribution of primary care providers is established in the free market largely by hospitals that shape the portfolios of their training programs and insurers who determine payment for services. As in many other sectors where public need is important, the market does not always allocate resources in a way that optimizes public benefit and costs. As a result of a number of factors including compensation, practice environments, and experience in medical school, there is a shortage in the number of primary care physicians. This shortage is especially critical now that health care reform legislation will provide coverage for as many as 32 million previously uninsured Americans. Such an influx of newly insured individuals will undoubtedly increase the demand for primary care services nationwide.

Even before the enactment of this legislation, the U.S. primary care physician workforce has been in jeopardy. Medical student interest in primary care has declined because students see primary care physicians dissatisfied with their high workload and low income. These factors are also contributing to accelerated attrition of physicians from primary care practice [9]. This is important as almost one-quarter of primary care physicians (about 55,000) are "near retirement" age (56 or older) as shown in Figure 1. Primary care production from graduate medical education also declined over the last decade to less than 24 percent of all graduating physicians [10]. Declining reimbursement, increasing workloads, and associated administrative requirements contribute to accelerated attrition [9].

Physician workforce supply and its balance have been controversial over the last two decades. Physician shortages were predicted in the 1970s, while an oversupply was envisioned in the 1990s, especially for subspecialty physicians. These predictions were largely based on

Figure 1: Age Distribution of Patient Care Primary Care Physicians



Source: AMA Masterfile data as fo December 31, 2007 [11]

the emergence of HMOs and the concept of managed competition. Both relied more heavily on the role of primary care and less on subspecialties. These factors led to increased medical student interest in primary care, which proved to be fleeting.

As the new millennium began, tight controls on managed care had vanished because of public backlash and a more favorable economy. Health care reverted to a more traditional fee-for- service reimbursement system. Insurance, including Medicare, rewarded physicians handsomely for procedures and innovative technologies such as advanced imaging. However, reimbursement remained limited for those physicians in primary care and or other specialists who performed "cognitive" services such as disease management, coordination of care, or counseling. In many cases, a complicated office visit is paid at a rate that is a fraction of a less time-consuming procedure [12]. A procedure performed by a specialist may be reimbursed at significantly more than the amount paid to a primary care physician who has spent the same amount of time with a complicated patient [13]. Because of the rising burden of chronic disease, primary care physicians' incomes have been disadvantaged because of the current approach to reimbursement. They often have the most challenging and complex patients and yet receive disproportionately low payments for providing services to these patients.

These facts are not lost on physicians-in-training who now show decreased interest in primary care careers. If these trends continue, the supply of primary care physicians will erode within the next 10 years, particularly as many currently practicing primary care physicians reach retirement age. This shortage has profound implications for the U.S. economy and the health of its citizens. Addressing this shortage will be critical to implementing key provisions of health care reform.

The solutions to this problem must address several causal factors. Poor reimbursement rates for primary care physicians are only part of the problem. Physicians-in-training need to see primary care as a rewarding and well-organized career choice that offers both a practice environment and lifestyle attractive enough to warrant 30 years of challenging practice.

There is one essential caveat that should be addressed. Because of the rising burden of chronic diseases, as well as other factors, primary care physicians' incomes have not kept pace with the increasing costs of their practice and have been disadvantaged because of the current approach to reimbursement. This does not appear to be the case for general pediatrics. In fact, compared to other areas of primary care, medical student interest remains high in general pediatrics.

During the last decade, there were increases in the numbers of medical students choosing general pediatrics [14]. With regard to the supply of general pediatricians and in the context of this report, the major challenge is the geographic maldistribution of general pediatricians. For example, in Idaho there are 32 general pediatricians per 100,000 children whereas in the District of Columbia the ratio is 186.6 per 100,000 [14].

The Historical Evolution of Primary Care

Health care delivery has changed in the United States in the last 50 years. Historically, the vast majority of physicians provided both general medical and surgical care and were called general practitioners. As surgery became more complicated, many of these physicians retreated from surgery to focus more on chronic diseases such as heart failure, diabetes, and hypertension. In the 1960s and 1970s, many of the generalists still maintained a very active inpatient practice in the hospital. In that era, most ill patients were hospitalized, often for diagnostic evaluations or to treat a chronic disease. Patients with advanced disease would remain in the hospital until they died or recovered. The general practitioner cared for both hospitalized patients and maintained an active office practice.

In the 1980s, among the changes that greatly influenced medical practice was Medicare's development of diagnostic related groups (DRGs) to reduce hospital costs. The DRG system defined the level of fixed payment for every hospital admission, independent of the number of days the patient spent in the hospital. Hospitals were now motivated to reduce lengths of stay and shift much of the care to the ambulatory setting. Thus, ambulatory care became one of the fastest growing costs in health care delivery [15,16].

This shift to ambulatory care profoundly changed medical practice. Physicians could no longer admit patients for diagnostic evaluation and keep them in the hospital for advanced therapies while collecting fees for the performance of said services. Instead, these patients were cared for in the ambulatory setting except when acutely ill. This placed tremendous pressure on physicians. When most sick patients were hospitalized, their care was provided under controlled circumstances. The physicians were supported by hospitals' substantial infrastructure of nurses and consultants. With DRGs, the situation was transformed: many chronically ill patients remained in the ambulatory care setting and depended solely on the services of the primary care physician and a small office staff.

When Medicare developed DRGs to reduce hospital costs, a significant amount of care that traditionally occurred in the hospital was displaced to the office practice of the primary care physician. This failed to increase payments to physicians to help them care for these more complex ambulatory patients. In effect, the cost of

chronic care was shifted from the hospital to the primary care physician – with no offsetting payment. This resulted in a disconnection between hospital and ambulatory care, making the delivery of care to these patients more challenging. While patients are admitted to the hospital briefly for acute problems, such as congestive heart failure, the fragmentation of care resulting from shorter hospitalizations often results in readmission and further exacerbation of their chronic disease. In addition, the management of contributing factors, such as dietary indiscretion and poor medication adherence, is left to the primary care physician, who may not be able to afford the infrastructure to manage these complex issues [17].

The primary care physician is also responsible for providing preventive services. These include screening for cancer, diabetes, cholesterol, and hypertension and the initial management of patients who are found to have these common conditions. None of these services is simple to organize and execute. The development and use of registries to track preventive services, education and compliance are substantial and time-consuming issues [18].

This heavy burden of preventive services and the management of chronic conditions are not well reimbursed relative to services provided in other medical specialties. Furthermore, under Medicare fee-for-service payment, the primary care physician can only collect for these services when the patient is seen face-to-face. This payment system discourages more efficient consultations that could be provided via telehealth methods, over the phone, and through e-mail. In order for the doctor to receive reimbursement, patients must report to the office for routine follow-up and therefore must comingle with other patients who have unstable (and perhaps contagious) medical conditions. This situation will only worsen as the American population ages, thus increasing the burden of chronic disease. This demographic shift, which has been inexorable in the past two decades, has placed steadily increasing pressure on adult primary care practice [19].

It is useful to compare the evolution of adult and pediatric primary care to see how the issues differ. In pediatrics, the patient population turns over constantly as children grow into adulthood. Subspecialty physicians usually treat patients with pediatric chronic diseases, although the use of specialists varies according to the age of the patient as well as medical and surgical conditions [20]. In contrast, the adult generalist is in exactly the opposite situation. That physician may attract young patients early in his or her practice, but these patients age over time and begin to develop the predictable problems with chronic disease. Therefore, the more successful the physician, the more unstable the patient population may become. For such complex patients, there has traditionally been no extra reimbursement other than the pay-as-you-go fee-for-service model. Care coordination often goes unattended because there is no incentive in the reimbursement system for this time commitment. Unless this problem is corrected, Medicare beneficiaries will have increasing difficulty finding primary physicians to serve their needs.

The Growth of Subspecialty Physicians

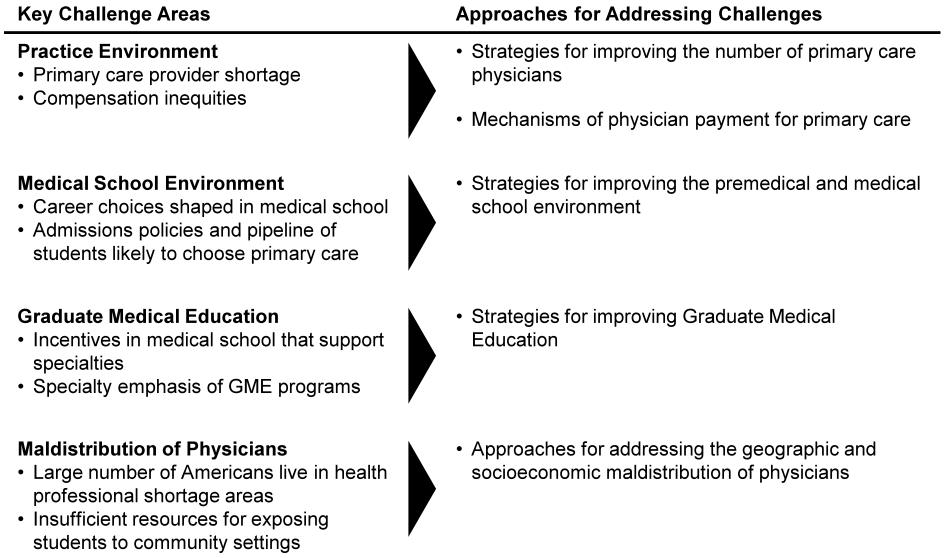
Subspecialty practices, particularly in the medical subspecialties, emerged in the 1970s. The first were in organ-specific areas such as cardiology, gastroenterology, and pulmonary diseases. Advanced technology such as cardiac catheterization, ultrasound, and fiber optic instrumentation transformed these cognitive specialties into specialties with complex procedures. Insurers viewed these procedures as very similar to surgical operations and reimbursed both the professional and technical fees accordingly. The result is that therapeutic and diagnostic procedures are well rewarded in most forms of insurance payment.

This has fractured the specialty of internal medicine, which had previously been dominated by primary care physicians called general internists. Now the vast majority of physicians entering internal medicine training are attracted to medical subspecialties, many of which are procedural in their orientation, such as cardiology, gastroenterology, and pulmonary [21]. The salaries of such subspecialists are double or even triple that of even the most lucrative of general internal medicine practices [22]. The lifestyle of the medical subspecialist is also attractive, particularly for those who perform procedures. Most patients with chronic disease are returned to the primary care physician after procedures are performed and the acute crisis has been resolved. Subspecialists have greater economic incentives to perform procedures rather than to manage complex care, and there is evidence that many of these procedures are unnecessary [23]. There is also evidence that some primary care physicians are beginning to follow this same path by introducing more lucrative procedures into their office to increase reimbursements. This leaves less time for the cognitive primary care services.

The Challenges

The Council reviewed four areas of key challenges contributing to the primary care shortage and approaches for addressing them. These include the practice environment, medical student experience, graduate medical education, and maldistribution of physicians. These factors are closely linked and failure to address each will jeopardize access to primary care for decades to come. Unless the practice environment and income improve, it is highly unlikely that physicians will consider primary care as a viable career option. This perception will be reinforced in the medical school environment unless primary care assumes a more important role in both undergraduate and postgraduate medical education.

Figure 2: Key Challenge Areas



Challenges in the Practice Environment

The mean compensation of primary care providers is less than 55 percent of the mean compensation of other medical specialties. For this reason and others, primary care physicians are dissatisfied with their careers compared to other physicians [24]. Many are struggling with relatively low reimbursement, high overhead costs, and increasing burdens of complex care. Sometimes, the dissatisfaction is apparent among primary care faculty members and community preceptors, which can send negative messages to students. A significant portion of a primary care physician's time (approximately 20 hours / week) is dedicated to preventive services. In most cases, these services are not well compensated [18]. In addition, physicians have time for only brief visits with their patients, many of which have chronic disease and are aged. However, the primary care physician often cannot afford the time or the office staff to meet these challenges. This leads to physician and patient dissatisfaction and to poorly coordinated care [25]. This may be the reason that many general internists leave active clinical practice within 10 years of earning their board certification [26]. The American Board of Internal Medicine and the American College of Physicians (ACP) recently found that 17 percent of general internists certified in the early to mid-1990s have since left internal medicine. This raises the possibility of significant mid-career attrition from primary care even before retirement age [27].

Many primary care physicians become professionally isolated. They have very little time to go to the hospital to interact with other colleagues. This constraint has led to eroding relations between hospitals and physicians [28,29]. When patients develop problems too complex for the office, they are sent to the hospital and, if admitted, often treated by a "hospitalist" physician assigned to the patient. Once that patient's condition stabilizes, he or she is discharged, often while still in a fragile state. The primary care physician has little time and few resources to focus on this potentially unstable patient, who previously would have remained hospitalized for a longer period of time. This may be a key reason why hospital readmissions are so common for patients with chronic diseases [30].

Compensation and lifestyle issues affect not only satisfaction and retention of practicing physicians, but also affect student interest in primary care practice. The Association of American Medical Colleges (AAMC) found that a variety of factors contribute to making a specialty choice, with influences of mentors in the field, lifestyle and options for fellowship training ranking as having the strongest influences [31]. Salary and family expectations also played significant roles in the decision making process. The Macy Foundation supported study recently reported a mean lifetime income differential between specialty and primary care physicians of $3.5 million. The foundation found that this differential had a significant negative impact on the choice of primary care careers by medical students [32].

Among primary care physicians, career dissatisfaction focuses on two issues—low income compared to other physicians and heavy workload driven by the administrative burdens of practice. For the practice to be professionally rewarding and attractive, both problems must be solved quickly.

Challenges in the Medical School Environment

The percentage of those U.S. medical graduates choosing family medicine decreased from 14 percent in 2000 to 8 percent in 2005 [33]. These career choices are strongly shaped by the medical school experience. While many students express interest in pursuing careers in primary care when they first enter medical school, this interest may erode by the time they choose their graduate medical education specialty in the fourth year [34]. In U.S. osteopathic medical schools, graduating seniors' intent to pursue primary care dropped from 34 percent in 2001 to 29 percent in 2008 [35].

One reason for this decline in interest levels is exposure to what has been termed the "hidden curriculum" [36,37,38]. During clinical training, impressionable medical students work shoulder-to-shoulder with residents, interns, and their supervising faculty. This is their first glimpse of the "real world" of medical practice and they are fed a steady diet of subspecialization. This is because most medical schools have, in one form or another, a faculty practice plan anchored to a large hospital that attracts acutely ill patients.

Furthermore, students receive relatively less exposure to ambulatory practice compared to their inpatient experience. Ambulatory practice is tightly managed and requires a high level of productivity. Placing students in this setting disrupts this productivity and requires financial support to offset this cost. The result is that most medical students have heavy exposure to serious acute subspecialty inpatient care and very little exposure to ambulatory care, where most of American medicine is practiced. The opportunity for exposure to role models in primary care practice is very limited.

The exceptions to this rule are medical schools that emphasize primary care education. Most often, these are publicly funded schools whose mission is to train physicians for their community, region, or state. However, in the aggregate, a minority of medical students trained in this country has any significant exposure to primary care practice unlike medical students trained in osteopathic medical settings whose primary mission is geared towards the production of primary care physicians. The primary care physicians in the academic medical center are often not full time clinicians, and students usually are not given the opportunity to "live and breathe" a primary care practice on an around-the-clock basis. To address these challenges, strategies should be developed to expand student opportunities during the premedical and medical school phases of training.

Challenges in Graduate Medical Education

Medical school deans and university presidents have traditionally been judged on their ability to build large medical research enterprises focused on discovery and innovation. Most academic medical centers focus on technology-intensive care to pursue these institutional goals, emphasize basic science and clinical investigation, and provide relatively greater rewards to subspecialty care [39]. In most schools, the family medicine department, dedicated to primary care, is dwarfed in size and prestige by the department of internal medicine, which is often the largest research department in the entire university. In addition, many large hospitals have developed GME programs to support their complex care programs. The GME programs of these large teaching hospitals are effective for the recruitment of physicians to the medical staff and for building subspecialty clinical care. This disconnect between meeting the needs of the population versus meeting the needs of the academic health center was the focus of an Institute of Medicine report in 1989 and has recently been an area of concern for the Medicare Payment Advisory Commission.

Although Medicare capped its funded GME slots in 1997, accredited GME positions have grown 6.3 percent from 2003-2006, virtually all of which are self-funded by the hospitals. Despite this increase, a rise in subspecialty rates led to fewer physicians pursuing generalist careers [10,40]. Like student choices, this build-out of residency training positions is highly correlated with specialty income [41]. Teaching hospitals invest in lucrative services in order to support their bottom line and residents and fellows are an inexpensive way to support those services. Increasing options for subspecialization has both direct and indirect effects on primary care production, first by closing primary care positions to be used for subspecialty training, and second by giving would-be primary care physicians options to subspecialize. The net effect is a substantial reduction in primary care production from GME, now at about 29 percent or less compared to 32 percent from 2003 to 2008 [42]. In bending GME to service their financial bottom line, the needs of the population are not best served.

All GME payments from the Centers for Medicare & Medicaid Services (CMS) are awarded to hospitals. Therefore, at many levels, GME payments have been used to foster the clinical enterprises of the teaching hospitals, which are largely devoted to technology-intensive subspecialty care. There is little incentive in GME payments for education in primary care or in community-based ambulatory settings that are often more expensive to operate. Strategies should be implemented to improve GME and to modify incentives so that they foster interest in primary care education and careers.

Challenges in the Maldistribution of Physicians

Primary care physician maldistribution in the U.S. is a chronic public policy challenge. Despite persistent efforts to address the problem through various initiatives,

approximately 50 million Americans live in health professional shortage areas (HPSAs) [43]. While the overall numbers of physicians per capita has increased, there remain significant shortages in many rural and inner city areas where many minority and/or low-income individuals reside. While 20 percent of the U.S. population lives in a rural area, only 9 percent of the nation's physicians serve that population [43]. Effective approaches for addressing the geographic and socioeconomic maldistribution of physicians should be developed and implemented.

Recommendations

The Council on Graduate Medical Education met in November 2009 and April 2010 to examine these challenges and develop recommendations. The Council's review of the challenges and their recommendations are presented in this report. The recommendations are presented in five categories: the number of primary care physicians; mechanisms of physician payment and practice transformations for primary care; the premedical and medical school environment; the graduate medical education environment; and the geographic and socioeconomic maldistribution of physicians.

The recommendations are designed work in a complementary fashion and in some cases implementation should be sequenced to maximize effectiveness. Mechanisms for payment to address compensation disparities should be implemented prior to improving capacity in the medical school and graduate medical environments. Recommendations for increasing supply of primary care physicians should be implemented in parallel with recommendations for addressing maldistribution of physicians so that mitigating shortages in some areas does not hinder improvements in other areas.

Discussion

Preamble: Policies and programs should be implemented to enhance and support the practice of primary care, and to increase the supply of primary care physicians. Payment for physician services is biased in favor of hospital-based and procedural services and does not provide appropriate incentives to enhance and support the practice of primary care, or to increase the supply of primary care physicians. Policy changes should be dramatic to remedy these legacy biases and have immediate effect. COGME recommends against policies that favor slow and incremental change.

1. THE NUMBER OF PRIMARY CARE PHYSICIANS

Recommendation: Policies supporting physicians providing primary care should be implemented that raise the percentage of primary care physicians (general internists, general pediatricians, and family physicians) among all physicians to at least 40 percent from the current level of 32 percent, a percentage that is actively declining at the present time. The achievement of this goal should be measured by assessing physician specialty once in practice, rather than at the start of postgraduate medical training.

Congress and the Department of Health and Human Services should:

1. Implement policies that raise the percentage of primary care physicians among all physicians to at least 40 percent.
2. Implement policies that increase the supply of physician assistants, nurse practitioners, nurses, and other staff positions necessary for coordinated, integrated practice in primary care teams.
3. Provide incentives and regulatory reform so that clinicians and staff have the opportunity to "work at the top of their degree" regardless of specialty or setting.
4. Encourage and support the roles of other physicians who provide comprehensive, longitudinal primary care.

Rationale: The current U.S. primary care physician workforce, critical to effective health care delivery, is in jeopardy of serious decline because of decreased production, accelerated attrition, and contraction of effort. There is a dramatic shortage of primary care physicians for adult care and a maldistribution among primary care physicians across the nation. Decreased medical student interest in primary care is caused by multiple factors including heavy workload and insufficient reimbursement. These same factors are leading to accelerated attrition from primary care practice.

Problem / Opportunity for Improvement

Situation

There is a dramatic shortage of primary care physicians for adults and a maldistribution of all primary care physicians. The large cohort of physicians born between 1940 and 1960 is nearing retirement: in 2005, more than 250,000 active physicians were over 55 years old [44].

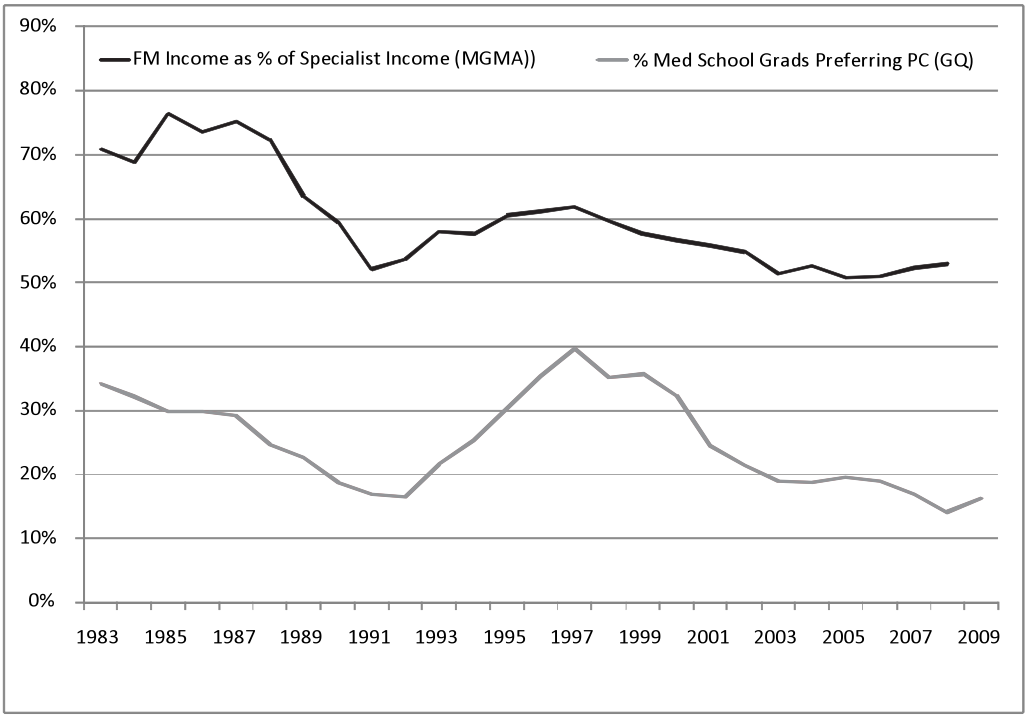
There is significant evidence that optimal health care outcomes and optimal health system efficiency are demonstrated when at least 40-50 percent of the physician workforce is composed of primary care physicians (PCPs) [45]. For example, a recent Government Accountability Office (GAO) report concluded that over-reliance on specialty services results in a less efficient health care system [46].

The report also concluded that preventive care, care coordination for the chronically ill, and continuity of care can achieve cost savings and improve health outcomes [46]. Baicker and Chandra found that established surrogate markers for health care outcomes in the U.S. are improved at considerably lower expense in states that have a high supply of primary care physicians [1]. In addition, socioeconomic and racial disparities in health care outcomes are dramatically reduced when there is an appropriately sized primary care workforce [3].

However, the proportion of primary care physicians is currently 32 percent (as compared to the entire physician workforce) and is declining. In 1961, half of U.S. physicians were generalist physicians and most were general practitioners. Since then, the percentage of PCPs has declined [47,48]. In the late 1970s, 10 years after the birth of family medicine as a specialty, the percentage of primary care physicians in the U.S. stabilized at about 36 percent of the total physician workforce. The percentage of U.S. physicians in primary care remained at 36 percent until 1985 but has since fallen to 32 percent in 2007, a relative decline of 11 percent [42]. Moreover, aggregate figures do not reflect the fact that there are substantially fewer primary care physicians per 100,000 people in rural areas as compared to urban areas [46].

Current medical student specialty preferences indicate that the percentage of physicians who practice primary care could potentially decline significantly over the next ten years unless there is immediate active intervention. As shown in the figure below, there has been a downward trend in preferences for primary care, correlated to the decline in the relative income of family medicine when compared with specialties. It should be noted that other

Figure 3: Family Medicine vs. Specialty Income and Primary Care Preferences



Source: Altarum Institute, 2010 [42]

Note: FM Preferences is defined as the percentage of U.S. MDs expressing a preference for primary care as a specialty choice in the AAMC Graduation survey.

factors including expectations of the practice environment and lifestyle also play a significant role in specialty choice. Hauer and colleagues found, for example, that students are discouraged by the challenges of caring for the types of patients seen in internal medicine [49]. In a survey of 1,177 fourth-year medical students at eleven medical schools, the authors found that students had serious reservations about the quality of life and rewards of internal medicine compared with other specialties. Students reported they were dissuaded from choosing to work in internal medicine by their experiences with elderly and chronically ill patients [49].

Objectives

To address the problem described above, policymakers should work to implement policies that increase the supply of the primary care workforce to the optimal level. In addition, policies should be implemented that increase the supply of and better prepare the non-physician primary care workforce for primary care practice.

Analysis

1. **Implement policies that raise the percentage of primary care physicians among all physicians to at least 40 percent.**

For physicians who began residency training in 2008, Altarum Institute estimates that 28.7 percent will ultimately wind up practicing in primary care due to constraints on sought after specialty residency training positions [42]. For future cohorts, Altarum projects that the percent of new physicians practicing in primary care will continue to trend downward toward 17 percent if non-primary care and subspecialty positions continue to grow at historical rates. Altarum Institute estimates reflect an internal medicine subspecialization rate of 64 percent, consistent with resident tracking data from the American Board of Internal Medicine. These figures count all physicians practicing in general internal medicine as primary care, including those practicing as hospitalist physicians, and so may overstate the percent providing traditional primary care.

Salsberg preliminarily reported that of all residents in training, the percentage that would potentially practice primary care decreased from 2002 to 2007 [10]. Other estimates indicate 91 percent of the physicians who complete family medicine residencies will likely practice comprehensive, longitudinal care; 44 percent of residents completing pediatric residencies will likely practice general pediatrics [50]; and 10-20 percent of residents who graduate from internal medicine residencies will likely practice general internal medicine with a substantial comprehensive longitudinal outpatient practice [21,51]. Using these estimates, as shown in the figure below, only 16-18 percent of medical students who matched into National Resident Matching Program (NRMP) residencies in 2010 are likely to practice primary care. These figures do not include physicians in residency programs outside of the NRMP, such as those from programs accredited by the American Osteopathic Association, which would likely slightly increase the proportion in primary care.

Today osteopathic physicians, also known as DOs, constitute 7 percent of all U.S. physicians and are responsible for 16 percent of patient visits in communities with populations of fewer than 2,500 [52]. Recent surveys of graduating osteopathic medical school seniors indicated that 17 percent planned to pursue a career in family medicine; 3 percent in general internal medicine; 2.7 percent in general pediatrics; and 5.4 percent in obstetrics/gynecology (ob/gyn) and related subspecialties [52].

Figure 4: NRMP Match Summary 2010

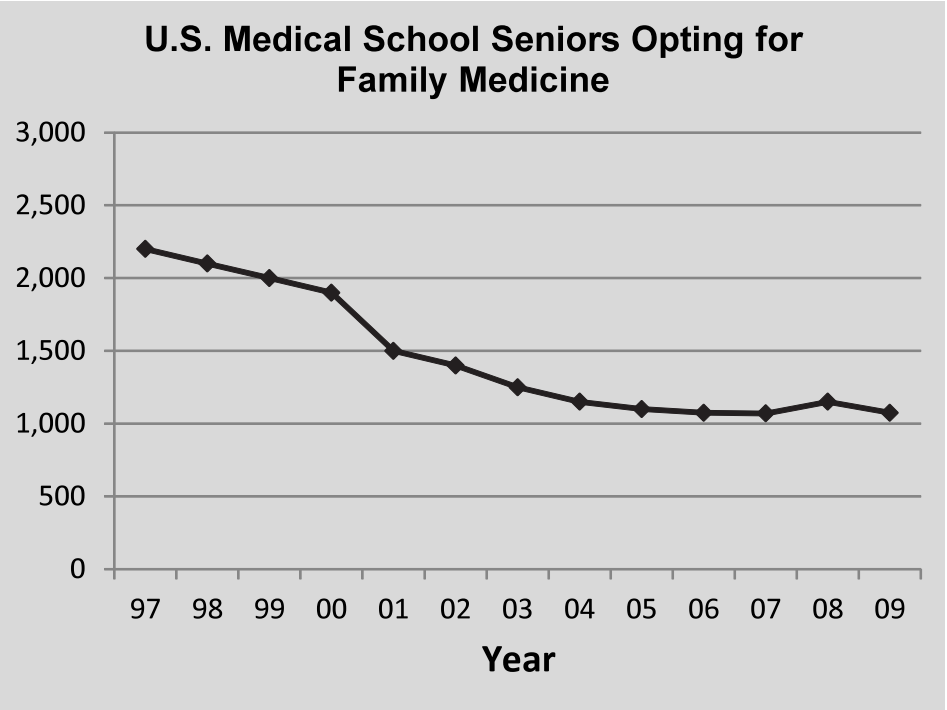
NATIONAL RESIDENT MATCHING PROGRAM MATCH SUMMARY 2010			
Primary Care Specialty	Positions Filled In the Match	Proportion of Residents Likely to Practice Primary Care	Number of Residents Likely to Practice Primary Care
Family Medicine	2,384	0.91	2,169
Internal Medicine	4,947	0.10 - 0.20	495 – 989
Pediatrics	2,383	0.44	1,049
Medicine – Pediatrics	355	0.50	178
Total Residents Likely to Practice Primary Care			3,891 - 4,385
Total Positions Matched			24,378
Percent in Primary Care			16% - 18%

Source: National Resident Matching Program, 2010 [53]; Freed, et al., 2009 [50]; Alliance for Academic Internal Medicine, 2009 [51]; Garibaldi, Popkave, & Bylsma, 2009 [21].

According to data from the American Academy of Family Physicians, the percentage of seniors graduating from U.S. medical schools and choosing residency spots in family medicine has declined from 62 percent in 1999 to 45 percent in 2010 [47]. Medical student interest in primary care and the number and proportion of primary care physicians must be increased radically if health care outcomes and equity are to improve and health care costs are to be controlled.

Estimates of physician supply and primary care physician supply may vary by source. The American Medical Association's publication "Physician Characteristics and Distribution, 2008 Edition" reports a total physician workforce of 884,000, of which 272,000 (31 percent) are primary care physicians [54]. This is consistent with estimates prepared for the Council by Altarum Institute [42].

Figure 5: U.S. Medical School Graduating Seniors Opting for Family Medicine



Source: American Academy of Family Physicians, 2009 [47].

The shortage in geriatricians has also been exacerbated as measured by decreasing numbers of physicians sitting for the geriatric board exams and applying for geriatric fellowships. Physicians caring for an aged population face the most acutely ill patients and depend primarily on Medicare reimbursement for services rendered. Outside of academic settings where there may be some degree of cross subsidization, it is simply unfeasible to make ends meet when only caring for the elderly.

The shortage of primary care physicians would become even more significant if health care reforms extended coverage to some or all U.S. residents who are currently uninsured. In a scenario where 35 percent of those currently not covered gained insurance coverage, 84,000 primary care physicians would be required [55].

Other estimates have also shown a significant shortage of primary care physicians at present and a significant shortage that will grow for decades unless drastic action is taken immediately. Colwill and colleagues predict a deficit of 44,000 adult primary care physicians by 2025 [56]. Subsequent analysis by Colwill and the American Academy of Family Physicians notes that "a more-rapid-than-expected decline in the production of general internists suggest that shortages of adult care generalists will be even worse than predicted, and that family physicians will be relied upon to close the bulk of that gap" [47].

Analysis by FocalPoint, based in part on data from a recent AAMC study suggests there is a shortage of 63,000-139,000 primary care physicians. An additional 63,000 primary care physicians would be required in the U.S. physician workforce to raise the proportion of primary care physicians to 40 percent of all physicians, and 138,000 primary care physicians would need to be added to reach 45 percent. This estimate could be refined by considering that some primary care is delivered by health care professionals other than family physicians, general internists, and general pediatricians. Remarkably few people declare other specialties or providers as their usual source of care, in fact just three percent of adults and less than one percent of children [57]. Many women consult an ob/gyn for their gynecologic care and some consider that they are the source of their primary health care. Women who cited the ob/gyn as their usual source of care were mostly young women. As the shortage of primary care physicians increases, the expected demand for ob/gyns and expected shortfalls in this field also needs to be considered. Moreover, 11.9 percent of primary care visits in the U.S. in 2006 were attended solely by a nurse practitioner (NP) or physician assistant (PA) [58].

Figure 6: Magnitude of Primary Care Physician Shortage

Number of Additional Primary Care Physicians Required

	Today	40% PCP/P ratio (1)	35% UI Covered (2)	100% UI Covered (3)
Number covered by health insurance	259,000,000	259,000,000	275,100,000	305,000,000
# PCPs	272,000	335,000	356,000	394,000
Additional PCPs required		**63,000**	**84,000**	**122,000**

Notes:
(1) Number of PCPs required to reach ratio of PCPs to all physicians of 40%; 46 million uninsured not covered
(2) Number of PCPs required to cover 35% of those currently uninsured; assuming same PCP per capita ratio as scenario (1)
(3) Number of PCPs required to cover 100% of those currently uninsured; assuming same PCP per capita ratio as scenario (1)

Source: AAMC 2009 State Physician Workforce Databook [7], FocalPoint 2010 [59].

History informs us that immediate action is needed. A 1989 Institute of Medicine (IOM) report, which addressed the need for radical change in graduate medical education financing to improve the nation's primary care supply, recommended incremental changes rather than immediate action to achieve its recommendations [60]. Incremental change did not lead to the outcomes desired by the IOM, and the problems persist today at an even greater magnitude. A policy of incremental change will likely lead to failure again. Drastic and immediate systemic changes are needed to increase the number of primary care physicians per capita and the percentage of primary care physicians among all physicians into the range that will optimize health care outcomes, equity, and costs.

Several steps are required to increase the number of practicing primary care physicians. The first step is to make primary care more attractive by improving compensation and providing support to restructure practices. The second step is to modify medical school education to promote student interest in primary care. The third step is to re-design graduate medical education by policies that reward institutions to increase their GME commitment to well organized primary care.

2. Implement policies that increase the supply of physician assistants, nurse practitioners, nurses, and other staff positions necessary for coordinated, integrated practice in primary care teams.

As the demand for primary care and coordinated, integrated systems of practice increase, so will the demand for non-physician clinicians (NPCs). Such clinicians will play a vital role in the provision and coordination of care in primary care delivered in the context of the Patient-Centered Medical Home.

There has been rapid growth in the number of physician assistants (PAs) but the profession is trending towards specialty care. Physician assistants and nurse practitioners (NPs) comprise the largest groups of NPCs who will participate in coordinated systems of primary care. In 2007, there were approximately 80,000 PAs eligible to practice in the U.S. [61]. There are currently approximately 125,000 NPs practicing in the U.S. [62].

Unfortunately, the percentage of new graduates of PA and NP programs who serve in primary care practices is dwindling. While the majority (68.8 percent) of PAs practiced in primary care settings in 1974 [63], only 37 percent of PAs reported one of the primary care disciplines as their primary specialty in 2008 [61].

Several studies support the effectiveness of collaborative practice, in which physicians and other providers work to coordinate patient care together under the direction of the physician in a common setting. As our health system shifts toward preventive and chronic care, efficiency in provision of services will become increasingly critical. An analysis of actual and recommended time for patient care typically provided by family physicians concluded that a single physician supervising two full-time PAs or NPs could provide all services recommended by the U.S. Preventive Services Task Force to a panel of 2,500 patients, which is a typical case load in family medicine [64]. Increasing physician productivity through collaborative practice with NPCs would help to mitigate the future projected shortage of primary care physicians. Patient satisfaction is high in a variety of systems providing collaborative care, including a large managed care organization [65], an academic medical practice [66], and the Veterans Health Administration [67]. Use of non-physician providers in collaborative primary care practice has also demonstrated cost savings: an analysis of a large managed care organization revealed lower practitioner labor costs per visit in the practices utilizing more PAs/NPs in care delivery [68].

3. Provide incentives and regulatory reform so that all clinicians and staff "work at the top of their degree" regardless of specialty or setting.

Implementing reforms for establishing scope of practice for clinicians commensurate with their degrees has been a strategy for trying to manage health care costs. In the late 1990s, many states passed laws expanding the scopes of practice for non-physician clinicians [69]. Incentives such as reimbursement reform to expand the rates of reimbursement of non-clinician services can complement the regulatory reforms [70]. In addition to helping to manage the costs of care delivery, such reforms can help improve access for underserved populations [71]. Moreover, because some primary and preventive care is actually provided by specialists, many of these services could be managed in primary care settings, improving coordination of care and lessening demand on specialists, so that each profession optimizes its areas of expertise [72]. There same authors report that there is also strong evidence that specialists unnecessarily prolong their consultative relationships with patients as opposed to returning them to their primary care physician for continued care [72].

4. Encourage and support the roles of other physicians who provide comprehensive, longitudinal primary care.

Another way to increase the effective number of primary care providers is for more non-primary care physicians to provide comprehensive, longitudinal primary care in addition to their specialty offerings. Physicians outside of family medicine, general pediatrics, and general internal medicine sometimes provide primary care services to their patients. For example, in a nationally representative study, which had an overall response rate of 63.4 percent, leaders of 373 single-specialty cardiology, endocrinology, and pulmonology practices were surveyed to assess the extent to which specialists also serve as primary care physicians for their patients. Eighty one percent of practices reported that their physicians serve as primary care physicians for 10 percent or less of their patients, 12.5 percent serve as primary care physicians for more than 20 percent of their patients, and only 2.7 percent said they do so for more than 50 percent of their patients, as shown in the figure below [73]. Few patients name a non-primary care physician as their usual source of care, but it would be helpful to understand which specialties are more likely to fulfill this function in order to more accurately assess primary care access and supply and enhance the efficiency with which it is provided by specialists. People with non-primary care physicians serving in this role have significantly higher costs than those who have a primary care physician [57]. This is likely because such physicians do not function primarily as a usual source of comprehensive, longitudinal care. Thus, a key aspect of this provision is that the specialist must provide the full spectrum of primary care inclusive of the management of office-based chronic care, age related screening, and be reasonably accessible for the provision of acute care. Studies of the effectiveness of systems of care to improve outcomes and lower costs have used the Institute of Medicine definition of primary care, and include only family physicians, general internists, and pediatricians as primary care physicians in the analyses. It is unknown whether the population-based benefits of primary care extend to practices in which the delivery of primary care services is not the main focus. The effect of primary care delivered by non-primary care physicians may lessen the efficiency of the whole system. Further study of this issue is needed.

Figure 7: Percent of Patients for Whom Specialists Serve as Primary Care Physicians

Percentage of Patients for Whom Physicians in a Specialist Practice Report Serving as Primary Care Physicians.*				
Percentage of Patients for Whom Specialists Serve as Primary Care Physicians	Percentage of Practices, by Specialty			
	Cardiology (N=207)	Endocrinology (N=58)	Pulmonology (N=108)	Total (N=373)
0	48.1	40.4	42.0	45.7
1-5	19.6	18.0	28.0	21.5
6-10	18.1	7.7	7.1	14.0
11-20	5.6	4.6	8.3	6.2
21-35	2.2	6.8	7.5	4.1
36-50	5.0	10.9	5.0	5.7
51-66	0	0	1.5	0.4
67-90	0.2	8.0	0.0	0.9
91-100	1.3	3.6	0.7	1.4

* N denotes the number of practices in each category. Percentages are weighted to be nationally reprentative

Source: Casalino, Rittenhouse, Gillies & Shortell, 2010 [73].

Benefits of Adopting this Recommendation

- A physician workforce made up of a high percentage of primary care providers will bring about improved health care outcomes, improved access, and lower costs for health care.

2. MECHANISMS OF PHYSICIAN PAYMENT AND PRACTICE TRANSFORMATION FOR PRIMARY CARE

Recommendation: To achieve the desired ratio of practicing primary care physicians, the average incomes of these physicians must achieve at least 70 percent of median incomes of all other physicians. Investment in primary care office practice infrastructure will also be needed to cope with the increasing burdens of chronic care and to provide comprehensive, coordinated care. Payment policies should be modified to support both of these goals.

Congress, CMS, Medicaid, and private insurers should:

1. Address mechanisms to increase payments immediately to primary care physicians and practices. Such mechanisms should include:
   - Preferential increases in fee-for-service payments to primary care services. Institute further measures, such as the 2007 Centers for Medicare and Medicaid Services (CMS) implementation of the American Medical Association (AMA)/Specialty Society RVS Update Committee (RUC) recommendation to increase the work relative value unit (RVU) valuation. This will correct any inequities in the fee-for-service system and will provide higher payments for primary care services. The recently passed the Affordable Care Act provides for a 10 percent bonus in Medicare payments for primary care practices that provide at least 60 percent of their services in primary care.
   - Financial rewards for care coordination in primary care practices. Dramatically expand payments for care coordination. Congress and CMS should expand Medicaid programs and institute Medicare programs with payments that appropriately reflect the true aggregate costs for care coordination to primary care practices that emphasize the four essential functions of primary care. Private insurers should institute similar care coordination payments to primary care physicians in primary care practices.
   - Financial rewards for improvements in performance measures. Authorize study of systems of pay-for-performance to ensure simplicity and to make certain that they are based on evidence that measures improvement of patients' symptoms, problems, functioning, resiliency, and slow progression of ill health.
2. Reward the Patient-Centered Medical Home (PCMH) financially when its physicians meet the four essential functions (first contact access, patient-focused care over time, comprehensive care, and coordinated care); the three corollary functions (family orientation, community orientation, and cultural competency); and when measures of process and quality are met and improved. The PCMH should be supported as the construct for the practice environment that achieves optimal care coordination and integration, for use of

health information technology, for enhanced access, and for appropriate payment. Study levels of funding necessary to sustain the PCMH model and its impact on costs in settings other than physicians' offices.

3. Implement payment models that bundle payments for full-service accountable care organizations and/or incentivize the development of community health care organizations that provide the four essential functions of primary care through collaboration of primary care physicians, public health, care coordination organizations, and mental health organizations.

Rationale: The current payment system contributes to several key challenges, including disincentives for students and providers considering primary care and a fragmented health care system wherein different providers offer care to a patient with little integration or coordination. Addressing these challenges would lead to improved health care outcomes and better containment of costs.

Problem / Opportunity for Improvement

Situation

The first challenge in improving mechanisms of physician payment is the disparity in income between physicians in primary care and those in medical specialties. Since the late 1990s, there has been a steady decline in PCP income relative to specialty income; by 2004, median PCP income was only 50 percent of median specialty physician income [42]. The figure below shows the gap in average compensation between primary care physicians and specialist physicians in 2008 [74]. This gap has grown significantly over the last two decades despite Congressional intent to reduce it through the Medicare Resource-Based Relative Value System [57].

Figure 8: Primary Care Median Compensation vs. Specialty Median Compensation

		2008
All Primary Care:	**$**	**186,044**
Family Practice (without OB)	$	179,672
Internal Medicine*	$	191,198
Pediatric/Adolescent Medicine*	$	186,641
All Specialists:	**$**	**339,738**
Dermatology*	$	368,407
Emergency Medicine	$	258,131
Gastroenterology	$	449,014
Obstetrics/Gynecology	$	285,812
Orthopedic Surgery*	$	475,999
Psychiatry*	$	195,878
Surgery: General	$	320,116
Urology	$	383,016
All Nonphysician Providers:	**$**	**94,191**

* Represents specialties that are combined

Source: Medical Group Management Association, 2009 [74]

In a comprehensive literature review and examination of factors related to the choice of family medicine, Senf and colleagues found that students rejecting primary care as a career choice were concerned with low income, prestige, and breadth of knowledge required [75]. In a study investigating the perceptions of physician remuneration and how these perceptions affect career selection, Morra and colleagues found that the vast majority of medical students who were surveyed agreed with the statement that family physicians are paid too little [76]. Furthermore, the importance of payment as a factor in their choice of medical specialty increased with higher debt and advancing training. Students see careers in primary care as a poor choice for paying back the debt they have incurred during medical training, while specialized careers are considered a more cost effective way to repay student debt. Morra and colleagues concluded that financial considerations might be an important driver in the declining interest in family medicine. In 2008, Ebell showed that there is an extremely high correlation between specialty income and student residency choice; this had not changed since his prior study in 1989 [77]. The Graham Center found growth in the specialty income gap to be the strongest factor in predicting student and resident eventual specialty in practice, and that choosing primary care over other specialties reduced career earning potential by $3.5 million [57]. Findings from the Altarum Institute also corroborate the need to increase primary care income in order to promote student interest in primary care practice [42].

In an article entitled "Easing the Shortage in Adult Primary Care-Is it all about Money?" Steinbrook contends that compared with office-based generalists, those who enter medical specialty fields can expect more control over their lives, a greater variety of professional experiences, sufficient funds to pay off student debts, and higher incomes over the long-term—a $3.5 million gap return on investment over the course of a career for primary care versus specialty physicians [78]. The author suggests that increasing numbers of medical schools, students, and residency positions will have limited effects if students shun primary care careers. The discrepancies in income that make it difficult to entice students to enter primary care can be mitigated to some extent by targeted federal programs that support loan repayments for those working for the underserved, and implement related strategies.

Goroll and colleagues also attribute the crisis in the supply of primary care physicians in part to a dysfunctional payment system and present a model that replaces encounter-based reimbursement with payment for comprehensive care [79]. This model includes support for new systems and teams needed to deliver coordinated care. The model is also needs-risk-adjusted and performance-based. The model increases payment for PCPs in return for achieving societal health goals such as improved

access, quality, safety, and efficiency, which in turn can offset the costs of the investment.

Outside of the U.S., examples demonstrate that reducing the disparity in income can increase the number of physicians choosing primary care. The most recent data regarding the effectiveness of practice reform and increased reimbursement to primary care physicians upon student preference comes from Ontario, Canada. In response to a drastic decline in student interest in family medicine (the only primary care specialty in Canada), the mechanism of payment for primary care services was reformed (with a resultant increase in family physician income of 50-60 percent and a relative family physician income to over 80 percent of specialty income) and practice structure organized into a better coordinated model (the Family Health Team).

In Canada from 1998 to 2004, there was a 25 percent decline in the number of medical students who made family medicine their first choice of careers. At that time, a plan was implemented to reform the physician payment system to provide extra incentives for income to Canadian family physicians. By 2006, the median income of Canadian family physicians had risen to $212,000 per year or 87 percent of the median annual specialty income of $245,000 [80]. Since 2006, physicians' incomes have continued to rise, and median family physician income in medical home practices in Ontario reached $250,000 in 2009 [81]. Medical student choice for family medicine as a career in Canada has increased by 27 percent since 2004, to levels higher than those of 1998 [81]. In 2009, 39 percent of medical students in Ontario chose family medicine as a career (a relative increase of 62 percent) [81]. Nearly 4 million Canadians lack a family physician and half of that number report problems accessing health care. This has led policymakers to implement interdisciplinary teams, new organizational structures, governance and reimbursement models, after-hour care requirements, electronic health records, and pay-for-performance initiatives [82]. Use of new systems including a blended capitation model (the Family Health Network) and an enhanced fee-for-service blended model (the Family Health Group) were found to rapidly attract primary care physicians at a time when selection of primary care practice by medical residents was at an all-time low, reimbursements for primary care providers was a fraction of that paid to specialists, and there was a dramatic increase in the number of underserved communities [83].

In a recent and comprehensive report titled "The Future of Medical Education in Canada: A Collective Vision for MD Education," the authors examined how medical education can best respond to the evolving needs of that country, and included ten recommendations: address individual and community needs; enhance admissions processes; build on the scientific basis of medicine; promote prevention and public health; address the hidden curriculum; diversify learning contexts; value generalism; advance inter- and intra-professional practice; adopt a competency-based and flexible approach; and foster medical leadership. To accomplish this, the report advocates realignment of accreditation standards, building capacity for change, increasing national collaboration, improving the use of technology, and enhancing faculty development. The active process that follows consists of data gathering, consultation, and formulation of recommendations and next steps. This review and revamping of graduate medical education was considered essential to assess current and future societal needs and identify changes needed to align them [84].

In the U.K., planning for a bonus payment system for general practitioners (now known there as family physicians) begun in 1999 and was fully implemented in 2004. Incomes for family physicians in the U.K. have risen swiftly to the point that the gap between the median incomes of primary care physicians and non-primary care physicians in the U.K. has vanished. This rise in income occurred when bonus payments added about 30 percent to British family physician incomes [85]. The anticipated rise in income in Great Britain for family physicians had a great impact on medical student choice. In 1996, 15 percent of medical students in Great Britain chose careers in family medicine. By 2004, there had been a steady rise in preference for family medicine, resulting in a consistent 30-35 percent family medicine preference from 2004 through 2006 among U.K. medical students [86].

Williams advocates a National Payment System in the U.K. where all payers would comply with standard payment methods and reporting standards [87]. While the amounts of the payments would vary, the methods for payer and provider types would remain consistent. Specific payment methods would be mandated to align incentives across providers. The author suggests that,

> "Pay for performance, best practice pricing, price discounting, alignment of incentives, the medical home, payment by episodes, and provider performance reports are a set of payment reforms that can result in lower costs, better coordination of care, improved quality of care, and increased patient/family involvement. While individual payers can implement some or all of these reforms, the overall effectiveness of the incentives to cost control is linked to the consistency of incentives across all payers"
>
> (Williams, 2010 p.59-60) [87].

The second challenge, introduced above, is the fragmentation of U.S. health care. This fragmentation can result in poor communication, increased medical errors, and reduced access to care. There is growing evidence that effective inter-professional practice models such as

the PCMH model can lead to improved patient outcomes and cost containment through more effective utilization of resources [88,89,90]. Under the PCMH model, a patient receives care from a team that provides comprehensive and coordinated care for the large majority of that individual's health care needs.

Over many decades, the fee-for-service system in the U.S. has created market distortions that have led to an inequity in physician reimbursement and a perverse incentive to provide more medical care and more procedures/imaging, regardless of whether those are in the best interest of the patient or the population. To facilitate adoption of the PCMH model, payment system reform is needed. Such reform should maintain the disparate provider infrastructure but change the payment system to provide financial incentives for more coordinated and efficient delivery of care [91]. Efficiency in practice styles can be promoted through an efficiency adjustment to PCP fee levels and modifications in Medicare's payment system that aligns incentives to desired objectives. McGuire suggests the pairing of risk and quality adjusted fee-for-service payments to primary care physicians to improve the efficiency of their care, with an active beneficiary choice of primary care physicians with an enrollment fee, would provide an incentive and the financing for service elements not covered by procedure-based fees [92].

Objectives

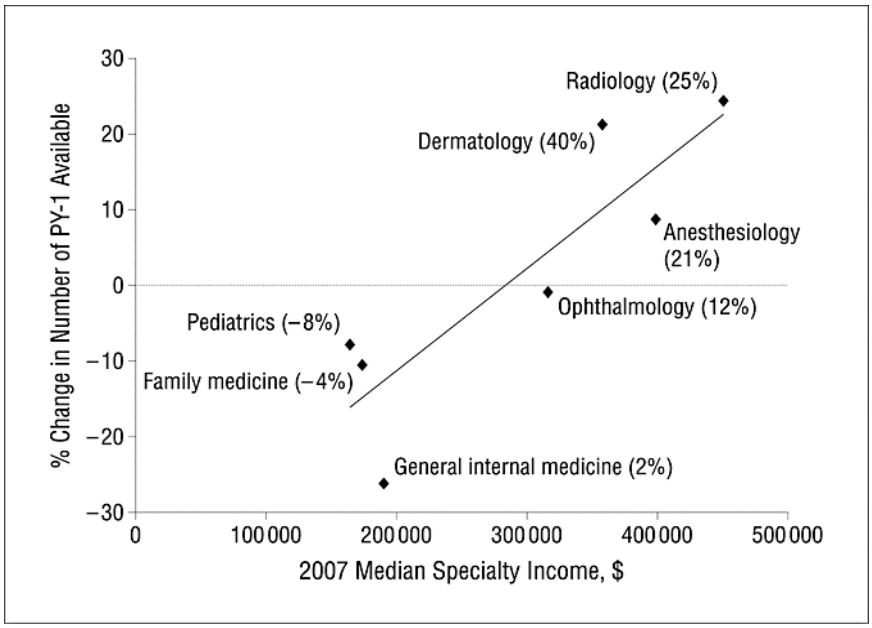
COGME supports policies that will narrow the gap between primary care physician income and specialty care physician income. Primary care physician income should be increased to a minimum threshold of at least 70 percent of the median income of non-primary care specialties. Increased payments to primary care physicians and to primary care practices must properly incent the type of care that improves the efficacy, efficiency, and equity of the system. Increased payments are needed immediately to lead to the development of practices that are attractive to health care professionals, medical students and patients.

Analysis

1. Address mechanisms to increase payments immediately to primary care physicians and practices.

In the late 1990s, median PCP income rose to 60-65 percent of median subspecialty income. More than one-third of medical students expressed interest in primary care careers at a time when median PCP income reached its highest levels as compared to median subspecialty income; this was also at a time of great anticipation among medical students that pervasive implementation of managed care would lead to an even greater increase in PCP income and the narrowing of the relative income gap compared to non-primary care physicians. However, since 1995, compensation of primary care physicians has grown much more slowly than that of most specialties. As shown in Figure 10, the only physician incomes that have not kept pace with the general rate of inflation are those of family medicine, general internal medicine, general ob/gyn, and general pediatrics. There have also been declines in the number of U.S. medical school graduates who have chosen careers in these four respective specialties [83,93].

Figure 9: Percentage Change in Year-1 Residency Positions Offered



Source: Weida, Phillips, & Bazemore, 2010 [41]

Note: Percentage change in number of year-1 residency programs (PY1) offered from 1998 to 2008 vs. 2007 income by specialty. Percentages in parentheses are percentage growth in specialty income adjusted for inflation between 1998 and 2007.

Altarum Institute noted that in order for medical student interest in primary care to reach the current one-third proportion of practicing physicians, current preferences for primary care would need to double. To achieve that, Altarum Institute concluded that a significant increase in primary care income relative to non-primary care, combined appropriately with other primary care enhancements, would be required [42]. Altarum Institute also concluded that increasing the primary care supply above its historic one-third share would require dramatic and sustained health system reform. Such reform would include major reforms in health care delivery models and reimbursement to emphasize and reward the practice of primary care [42].

Sandy and colleagues have also recently put forward recommendations for physician payment reforms in the "New Charter for Primary Care" [12]. These recommendations support increases in primary care physician reimbursement and suggest underlying mechanisms by which such an increase can be achieved. They recommend:

- Health care reimbursement must be rebalanced commensurate to the individual and population health value created by patient engagement, care coordination, and comprehensive personalized longitudinal care, as opposed to the current system, which rewards technical procedural volume. Congressional action was recommended to recalibrate the Resource-Based Relative Value Scale (RBRVS) fee structure for Medicare and Medicaid and for adoption by private insurers.
- The Medicare Sustainable Growth Rate (SGR) formula should be split into two pools: one for primary care (non-consultative services and consultative cognitive services) and the other for procedural and imaging services.
- Gain sharing approaches should be developed that reward both primary care and specialty physicians for quality improvement and reduced inappropriate variation.
- The U.S. should develop a blended payment system that provides proper incentives to improve health care outcomes and to maximize efficiency. This system should place less emphasis on fees-for-service and more emphasis on care coordination and pay-for-performance.

Figure 10: Change in Median Physician Compensation

Specialty	Median Compensation 10-year Change 1995 - 2004 (MGMA) Percent	NRMP Position Filled by U.S. Senior Medical Students 10-year Change 1998 - 2008 (NRMP) Number	%Change
Heme - Onc	86		
Gastroenterology	76		
Dermatology	74	49	24%
Radiology	64	420	73%
Urology	57		
Cardiology	47		
Psychiatry	38	128	27%
Anesthesia	35	687	175%
Pulmonary	35		
ENT	35		
General Surgery	30		
Neurology	28		
Emergency Medicine	26	259	31%
INFLATION 1995 - 2004	24		
Peds	24	(92)	(6)
OB/GYN	15	(90)	(10)
* General Internal Medicine	21	(336)	(45)
** General Internal Medicine	21	(2,160)	(80)
Family Medicine	20	(1,023)	(47)

* Includes only General Internal Medicine Primary Care Tracks
** Includes all residents in non-cat. IM Tracks-4,800 per year, 50% chose GIM in 1998
10% will choose GI in 2008

Source: Medical Group Management Association (MGMA) 2005 Data [93], National Residency Matching Program (NRMP, 2010) match data [53], Bodenheimer, Grumbach, & Berenson, 2009 [25],

An objective of such reforms should be to increase reimbursement to primary care physicians to reduce disparity in compensation between primary care and non-primary care physicians, and to provide sufficient payment for other important aspects of primary care, such as care coordination. Altarum Institute reported that current best estimates of the impact of income on physician specialty choice imply that an increase in primary care incomes of about 80 percent would lead to a doubling of interest in primary care, to 40 percent of medical students [94]. This finding is corroborated by the findings from Canada discussed earlier, which showed a substantial increase in student interest in primary care when primary care incomes reached 83 percent of specialty incomes. Primary care incomes that are at least 70 percent of specialty incomes are needed to stimulate a change in medical student interest toward primary care careers. Medical student choice of primary care careers nears optimal levels when primary care incomes are 80-85 percent of non-primary care incomes. Increases in reimbursement policy should reflect payments needed to achieve these levels of primary care physician income and to provide appropriate practice transformation and care coordination. Estimates of incremental near-term cost are set out in the chart below. The percentage from Medicare/Medicaid is an estimate based on family physicians, pediatrics, and internal medicine. Such increases in the short-term could also be tempered by policies that shift reimbursement, until the cost-saving benefits are realized.

Figure 11: Estimated Cost of Increasing Reimbursement

Incremental Medicare / Medicaid Funding Required to Increase Reimbursement	
Number of PCPs	272,000
Average revenue	186,044
Total Income	$50,603,968,000
% revenue from Medicare / Medicaid	26%
Total reimbursements	$13,157,031,680
Funding required to increase reimbursement by:	
20%	$ 2,631,406,336

Source: AAMC, 2009[95]; Lasser, Woolhandler & Himmelstein, 2008[22]; FocalPoint, 2010a [55]

Congress, CMS, Medicaid, and private insurers should institute further measures, such as the 2007 Centers for Medicare & Medicaid Services (CMS) relative value unit (RVU) revaluation that will correct the inequities in the fee-for-service system and will provide higher payments for primary care services.

A significant change in the Medicare fee-for-service system was made on April 1, 2007, when greater value was assigned to evaluation and management services typically performed by primary care physicians relative to procedural and imaging procedures usually performed by non-primary care physicians. This change was intended to produce a 37 percent increase in Medicare reimbursement for primary care visits, but the net increase was only 5 percent [96]. Institution of more aggressive RVU revaluations would correct the inequities in the fee-for-service system.

Congress, CMS, Medicaid, and private insurers should dramatically expand payments for care coordination. Congress and CMS should expand Medicaid programs and institute Medicare programs with appropriately high payments for care coordination to primary care practices that emphasize the four essential functions of primary care. Private insurers should institute similar care coordination payments to primary care physicians in primary care practices.

Care coordination payments are payments made directly to a primary care practice for coordinating the care of individual patients. The payments are usually made on a per-member-per-month basis and are in addition to payments for fee-for-service and pay-for-performance. Payments may be stratified by demographic characteristics such as age and gender, and by level of intensity of care necessary based on the presence of chronic illness in individual patients. In many regions of the United States and in other nations, care coordination payments have been successful in improving outcomes; in lowering costs for the health care systems; in improving income for primary care physicians; and in providing greater integration of public health care coordination, mental health, and primary care activities.

An example of this is the system that has developed in North Carolina: Community Care of North Carolina [97]. CCNC provides care coordination payments to primary care practices and to Public Health Departments for care coordination for Medicaid patients in the state of North Carolina. This integrated system achieved significant savings for the state Medicaid budget and dramatically decreased emergency room utilization and hospitalizations for asthma for patients who were part of the program. For CCNC, the PCMH was defined as a primary care practice that agreed to accept patients who chose that practice for their care. It illustrates the simplicity and power of a health care system that emphasizes primary care and public health simultaneously. Among the benefits provided by the program are a 34 percent reduction in hospitalization rates among asthmatic children and an 8 percent reduction in emergency department visits. The state saved an estimated $5.4 million over a 3-year period on care for enrollees who were either asthmatic or diabetic [98].

Congress, CMS, and private insurers should authorize study of systems of pay-for-performance to ensure simplicity and to make certain that they are based on evidence that measures improvement of patients' symptoms, problems, functioning, resiliency, and slow progression of ill-health. The development of pay-for-performance systems in the U.S. is still in its infancy. Medicare uses the Physician Quality Reporting Initiative (PQRI) system but this represents only a 1-2 percent bonus in Medicare payments to practices. Other pay-for-performance systems, such as the one developed by the National Committee on Quality Assurance to determine care coordination payments to Patient-Centered Medical Homes, are quite complicated and technical.

The U.K. has developed a pay-for-performance system that was intended to increase family physicians' income by up to 25 percent depending upon their performance with respect to quality indicators relating to the clinical care of ten chronic diseases [99]. This pay-for-performance system did indeed result in increases in family physician income in the U.K. of 25 percent or more. It has not been without problems and has been criticized because of exclusion of a large number of patients by exception reporting. In the long run, inappropriate indicators for pay-for-performance can lead to the removal of patients from a practice for unhealthy behavior or for failure to achieve targeted treatment goals. It can undermine cultural competence by de-emphasizing the biopsychosocial model and the health beliefs of individual patients. These systems have the potential to be complicated and burdensome for primary care practice and should measure performance that has a significant positive effect on health care outcomes and cost.

Significant study should be given to systems of pay-for-performance. The systems should emphasize process rather than outcome and should be simple. They should be based on evidence that encourages voluntary continuous quality improvement programs and participation in voluntary recognition reporting processes by primary care practices. Studies should measure improvement of patient's symptoms, problems, functioning and resiliency, and the late progression of ill health.

2. **Reward the Patient-Centered Medical Home (PCMH) financially when its physicians meet the four essential functions (first contact access, patient-focused care over time, comprehensive care, and coordinated care) and the three corollary functions (family orientation, community orientation, and cultural competence) of primary care, and when measures of process and quality are met and improved. Support the PCMH as the construct for the practice environment that achieves optimal care coordination and integration, for use of health information technology, for enhanced access, and for appropriate payment. Study levels of funding necessary to sustain the PCMH model and their impact on costs in settings other than physicians' offices.**

Medical care has evolved into three silos. The first is the primary care office, which is, at best, chaotic. The second is the hospital where inpatient care is provided by hospitalists because the primary care physicians have no time to supervise the care of their hospitalized patients and very few of their patients are there for any length of time. The third silo is subspecialty medicine, where care is often of a more episodic and technical nature rather than long-term comprehensive care management. These silos need to be dismantled and blended into organized systems that manage the patient across the continuum of care and align all providers with common incentives [100,101].

The PCMH can be an effective practice framework for achieving optimal care coordination and integration, use of health information technology, enhanced access, and appropriate payment [81]. Several definitions of the PCMH home have emerged. The American Academy of Pediatrics first advanced the concept of a primary care medical home model as a central location for archiving a child's medical records and as an accessible, continuous, comprehensive, family-centered, coordinated, and compassionate approach offering culturally effective care [102]. The American Academy of Family Physicians (AAFP), the American Academy of Pediatrics (AAP), the American College of Physicians (ACP), and the American Osteopathic Association (AOA), endorsed the principles of a PCMH model in a joint statement issued in February 2007 [103]. These principles are described in Figure 13.

Figure 12: Essential Functions of Primary Care

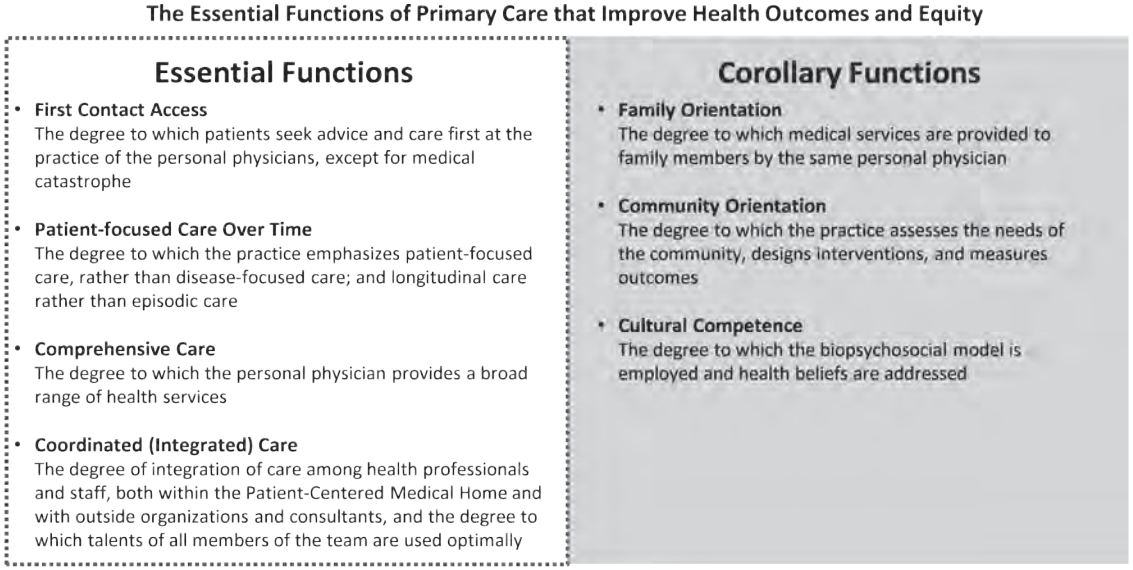


Figure 13: Primary Care Medical Home

Principle	Description
Personal physician	Each patient has an ongoing relationship with a personal physician trained to provide first contact, continuous and comprehensive care.
Physician directed medical practice	The personal physician leads a team of individuals at the practice level who collectively take responsibility for the ongoing care of patients.
Whole person orientation	The personal physician is responsible for providing for all the patient's health care needs or taking responsibility for appropriately arranging care with other qualified professionals. This includes care for all stages of life; acute care; chronic care; preventive services; and end of life care.
Care is coordinated	Care is coordinated and/or integrated across all elements of the complex health care system (e.g., subspecialty care, hospitals, home health agencies, nursing homes) and the patient's community (e.g., family, public and private community-based services). Care is facilitated by registries, information technology, health information exchange and other means to assure that patients get the indicated care when and where they need and want it in a culturally and linguistically appropriate manner.
Quality and safety	• Practices advocate for their patients to support the attainment of optimal, patient-centered outcomes that are defined by a care • Planning process driven by a compassionate, robust partnership between physicians, patients, and the patient's family. • Evidence-based medicine and clinical decision-support tools guide decision making • Physicians in the practice accept accountability for continuous quality improvement through voluntary engagement in performance measurement and improvement. • Patients actively participate in decision-making and feedback is sought to ensure patients' expectations are being met • Information technology is utilized appropriately to support optimal patient care, performance measurement, patient education, and enhanced communication • Practices go through a voluntary recognition process by an appropriate non-governmental entity to demonstrate that they have the capabilities to provide patient centered services consistent with the medical home model. • Patients and families participate in quality improvement activities at the practice level.
Enhanced access	Enhanced access to care is available through systems such as open scheduling, expanded hours and new options for communication between patients, their personal physician, and practice staff.
Payment	Payment appropriately recognizes the added value provided to patients who have a patient-centered medical home.

In 2004 and 2005, the evidence-based characteristics of the PCMH were defined by the aggregation of data from large population-based studies [2,104]. These studies defined characteristics of primary care practice that improve outcomes and lower costs through the use of systems of comprehensive, longitudinal care provided by personal primary care physicians.

Four essential functions of primary care can lead to improved health care outcomes. These four essential functions lead to corollary functions that are also associated with improved outcomes and efficiency. The PCMH combines the traditional elements of primary care practice with visionary elements for the use of health information technology, systems of enhanced access, and appropriate physician payment. Results of a PCMH demonstration project undertaken at Group Health from 2006-2007 demonstrated that PCMH enrollees reported higher ratings than controls on 6 of 7 patient experience scales, 10 percent of PCMH staff reported burnout at 12 months compared to 30 percent of controls, and PCMH enrollees used fewer emergency services and more e-mail, phone, and specialist visits. There were no significant cost differences at the conclusion of the study [105].

The construct of the PCMH will be most useful when it promotes the development of a pervasive network of practices that provide comprehensive, longitudinal care by a personal primary care physician. PCMHs will be most successful when they are defined simply and lead to practice settings where patients wish to attend and where physicians, health care professionals, and staff wish to practice.

The payment mechanisms discussed above would facilitate the necessary increase in staff-to-physician ratio to optimize integration of care and to significantly increase primary care physician reimbursement. These elements will attract the physicians and other health care professionals necessary to develop a pervasive network of PCMHs. These practices should exhibit enhanced systems of access, which include non-traditional methods of communication with patients and the development of virtual consult systems. Insurance coverage should be developed so that no out-of-pocket expenses are required of the patient for services delivered by the primary care physician in the context of the PCMH.

Medical students and resident physicians should have a significant increase in the amount of time for which they train in the context of the PCMH with a primary care physician. COGME suggests reallocation of resources in medical schools to both longitudinal and block experiences for medical students in primary care practices. The block experiences should be of sufficient length that the medical student clearly understands the essential functions of primary care and the PCMH.

The practices should be developed to achieve a "joy of practice." They should attract health care professionals, medical students, and patients.

3. **Implement payment models that bundle payments for full-service accountable care organizations, and/or incentivize the development of community health care organizations that provide the four essential functions of primary care through collaboration of primary care physicians, public health, care coordination organizations, and mental health organizations.**

The Accountable Care Organization (ACO) model features a group of aligned primary care physicians and subspecialists who take responsibility for outcomes and economics of a population of patients [106]. In some states, the Medicare Physician Group Practice Demonstration Program offers such an opportunity. Examples include the Henry Ford Medical Group and Geisinger Health System, which have shown cost savings as well as high quality outcomes [107].

There are several benefits of such integration and coordination of care. About 70-80 percent of primary care involves services such as the maintenance of stable patients, provision of preventive services, or management of records. There is also a significant amount of unpaid work performed by primary care physicians, such as review and interpretation of lab results, corresponding with patients, consultation with other medical professionals and other necessary activities [108]. Some of these services can be performed by health professionals other than physicians, thus increasing the opportunity for face-to-face patient-physician interaction, and allowing physicians to focus on more acutely ill patients. This is very similar to what happens in hospitals, where doctors, nurses, and other professionals work as a team. With an organized ambulatory system, the outpatient team monitors and manages routine care but brings unstable or acutely ill patients to the physician for earlier intervention. If the patient is hospitalized, the ambulatory system interacts intimately with the inpatient service so the continuity of care is uninterrupted.

Models such as this work better when the payment system is aligned to the practice model. Under the current payment system, physicians are paid separately from hospitals and physicians are often not optimally organized among themselves. To make primary care attractive as a career requires more than just increasing primary care physician payments – that step alone will still leave the primary care physicians isolated from other providers and disconnected from the hospital and public health entities. Instead, payment systems should be developed to align incentives. Payments could be bundled to include services by primary care providers, subspecialty physicians, and hospitals. This scenario could provide payment for certain conditions or episodes of care, for certain disease populations, or under a full or limited risk capitation [109]. Another scenario would provide different payment mechanisms for primary care and specialty services. The primary care services would be aligned with community health services through blended payments and would include financial incentives to integrate primary care medicine, community mental health services, public health, and community care coordination for patients with the most complex health problems [110]. In this scenario, medical specialty services would be aligned with hospital systems through a different mechanism of bundled payments.

These models are derivatives of the decade-old full-risk capitation model. That model is not widely used today because most capitations were not adjusted for risk and were managed by private insurance companies. In contrast, most group practices have found the practice philosophy of Medicare Advantage to be a promising model. The risk associated with a panel of patients can be assessed in order to make the payment stream more predictable. This allows systems of care to configure services to allocate resources appropriately. Bundled payment facilitates the shift of resources to primary care physicians because they are expert at managing multiple chronic diseases. This places the primary care physician at center stage in managing the patient's continuum of care. This leadership role, coupled with improved earning potential, would make primary care a much more attractive career to prospective physicians.

Currently, there is little economic connection between physicians and the hospitals, primary care, and subspecialists. Likewise, there are few economic connections between primary care physicians and public health,

mental health, and care coordination organizations in the community. The Council believes that optimal outcomes result when:

- Physicians are economically linked and the incentives are aligned;
- Health information technology (IT) is used to facilitate communication and effective partnerships exist with hospitals or public health or community organizations;
- There is a focus on quality metrics and best practices; and
- Compensation is based on quality and value, both for individual patients and for entire populations.

Benefits of Adopting this Recommendation

- Innovative models of care that address inequities in compensation between primary care providers and medical specialists will remove disincentives to enter primary care.
- The four essential functions of the Patient-Centered Medical Home (first contact access, patient-focused care over time, comprehensive care, and coordinated care) combined with integrated systems of care and highly functioning information technology work in concert to improve outcomes and lower costs.
- Reforming payment mechanisms to facilitate improved practice models will improve outcomes while simultaneously controlling costs. Thus, the crisis in the future supply of primary care providers is likely to be mitigated.

3. THE PREMEDICAL AND MEDICAL SCHOOL ENVIRONMENT

Recommendation: Medical schools and academic health centers should develop an accountable mission statement and measures of social responsibility to improve the health of all Americans. This includes strategically focusing and changing the processes of medical student and resident selection and altering the design of educational environments to foster a physician workforce of at least 40 percent primary care physicians and a health system that meets societal needs.

Medical Schools and Academic Health Centers should:

1. Allocate resources to:
   - Increase and/or sustain the involvement of primary care physicians through all levels of medical training;
   - Support student primary care interest groups;
   - Recruit, develop, and support community physician faculty members; and
   - Require student participation in rural, underserved, and/or global health experiences.
2. Expand medical school class size strategically to address the primary care physician deficit and maldistribution issues.
3. Reform admission processes to increase the number of qualified students more likely to choose a primary care specialty and to serve medically vulnerable populations such as the elderly and those with physical and functional disabilities.
4. Recruit and retain underrepresented minority students and faculty members.
5. Require block and longitudinal experiences of sufficient length that medical students clearly understand the essential functions of primary care and the medical home.
6. Collaborate with local communities and distribute resident training accordingly, support reductions in physician income disparities, and lead in the development of new models of practice.

Medical Schools, Academic Health Centers, the Association of American Medical Colleges, American Association of Colleges of Osteopathic Medicine, the Accreditation Council for Graduate Medical Education, the American Osteopathic Association, Congress, regulatory agencies, and licensing agencies should:

7. Reform the continuum of medical education, from premedical training through continuing education, to impart general competencies most efficiently and promote the choice of careers in primary care.

Federal and State governments should:

8. Provide increased incentives for physicians who practice primary care or other critical specialties in designated shortage areas.
9. Substantially enhance funding for scholarships, loans, loan repayment, and tuition waiver programs to lower financial obligations for students who plan and pursue careers in primary care.

Rationale: Students' future career choices are strongly shaped during medical school. While many students express interest in primary care when they first enter medical school, this interest may erode by the time they choose their graduate medical education specialty in their fourth year of training.

Problem / Opportunity for Improvement

Situation

As discussed in the introduction of this report, students' future career choices are strongly shaped during medical school. While many students express interest in

primary care when they first enter medical school, this interest may erode by the time they choose their graduate medical education specialty in their fourth year of training. Influences on students' choices include future earning power, lifestyle associated with the specialty, and training and role models [111]. In addition, in medical school, students receive significant exposure to subspecialization and inpatient experiences but less exposure to ambulatory practice. While there are some exceptions, a minority of medical students trained in this country has significant exposure to primary care practice.

There had been little growth in the number of Liaison Committee of Medical Education (LCME) accredited medical schools or number of medical students in these schools in the 40 years before 2002. Since 2002, the LCME has accredited five new schools and there are five more applicant schools. In addition, 90 percent of the 125 pre-existing LCME accredited schools of medicine plan to increase medical student enrollment [111]. In 2002, there was a baseline of 16,488 annual admissions to LCME medical schools; by 2009, the number of medical students enrolled had increased by 11.6 percent to 18,393. By 2013, an overall increase of 21 percent is projected (for approximately 19,900 medical students enrolled annually). The net increase in annual enrollment of medical students at LCME schools from 2002 to 2013 is expected to be less than 3,500 [111].

The American Association of Colleges of Osteopathic Medicine (AACOM) also predicts an increase in the number of schools of osteopathic medicine and in osteopathic medical students. From 2002 to 2009 there was a 62.2 percent increase in annual enrollment, from 3,079 to 4,994. The AACOM projects a further increase to 6,122 osteopathic medical students enrolled in 2013, for an overall increase of 3,043 or 99 percent [52]. Together, the increase in the number of medical students admitted to LCME schools and osteopathic schools each year will reach almost 6,000 compared to the 2002 baseline, for an increase of 30 percent [111].

These new medical school graduates will join a workforce with significant shortages in various disciplines. When supply and demand are considered in light of population-based health care outcomes and societal need, the shortages are most dire in family medicine, general internal medicine, general pediatrics, general surgery, and psychiatry [111]. As the population ages, according to data from the Geriatrics Workforce Policies Studies Center of the American Geriatrics Society, the current shortage of geriatricians is 8,600 and the projected future shortage is 23,447 by 2030 [112]. The additional medical students may provide some relief to the significant primary care physician shortage in the United States.

Canadian medical schools have faced similar problems recently. In 1998, the Canadian Residency Matching Service (CaRMS) reported that 32 percent of Canadian medical students had chosen family medicine as their career choice. By 2004, this percentage fell to 24.5 percent. Public officials and primary care physicians considered this a national emergency and plans were implemented to reverse the trend. The plans were successful and the CaRMS reports that 32.5 percent of Canadian medical students chose family medicine residencies in 2009. Most primary care physicians in Canada are family physicians and there is a relatively low contribution of general internal medicine and general pediatrics to primary care.

The Canadian plan focused on two major areas: the cultivation of student interest in family medicine in the first two years of medical school and increasing family physician income relative to specialty income. The plan to enhance student interest focused on reallocation of funds to increase the amount of teaching time for family physicians in Year 1 and Year 2 of medical school and through the implementation of a robust system of family medicine interest groups [113]. The family medicine groups in Canada also placed much greater emphasis on family medicine leadership training and leadership awards for medical students and residents.

Objectives

Although the current deficit in the production of primary care physicians is caused by many factors not directly related to the medical education process, medical schools must play a central role in improving preparation and production of students for entry into primary care specialties to meet the nation's health care needs. Current and planned increments in medical school class size are not likely to increase the number of students entering primary care specialties as long as medical school admissions and undergraduate and graduate training paradigms remain unchanged. This is especially true given the overwhelming impact that external factors (e.g., reimbursement) have on ultimate specialty choice.

Medical schools have an implied societal contract to produce physician resources in response to society's health care needs. Balancing students' eventual specialty choices with our nation's health care needs is difficult when most influencing factors occur outside the academic arena. These external influencing factors should not dissuade medical schools from implementing a re-examination of their admission processes, especially in the setting of class size expansion, to explore mechanisms to admit a greater number of qualified students who would more likely choose a primary care specialty. Finding these students may require identification of regional or medical school-specific attributes that potentially predict primary care specialty choice, since current evidence suggests that many locally successful programs may not have universal applicability. Success in meeting these objectives should

not be based on the number of students entering primary care. Instead it should be based on placement of graduates five years after medical school to determine which are still in primary care, either in practice or in training.

Medical schools and academic health centers should develop accountable mission statements and measures of social responsibility to improve the health of all. This includes strategically focusing and changing the processes of medical student and resident selection and altering the design of educational environments to foster a physician workforce of at least 40 percent primary care physicians and a health system that meets societal needs.

In tandem with reconfiguration of the premedical pipeline and medical curriculum, efforts should be aimed at reforming medical education to increase its primary care orientation. As suggested by Ramsey and Miller, academic health centers should develop a single mission for academic medicine to support the goal of social responsibility to improve the health of all [114]. Medical schools and academic institutions should be encouraged to support implementation of health care reform to improve health care outcomes. They should adjust their missions to help produce graduates who will place appropriate focus on health care needs of their communities. For example, medical schools can assume leadership roles in advocacy for appropriate distribution of residency physicians and professional reimbursement. They can advocate for primary care, both within medicine (e.g., revision of LCME regulations to require a department of family medicine), and outside (e.g., advocate for medical home and other concepts essential in primary care).

Medical schools should re-evaluate their educational processes and environments to ensure that they promote the choice of specialties needed to meet physician workforce needs and actively work to remove activities and experiences that disincentivize these choices. The implementation of early clinical experiences in holistic and continuous care, wellness, prevention, and chronic disease management provides students with insight into the care of the whole patient, family, and community – essential elements of primary care.

Analysis

1. Allocate resources to:

- Increase and sustain the involvement of primary care physicians throughout training;
- Support student primary care interest groups;
- Recruit, develop, and support community physician faculty members; and
- Require student participation in rural, underserved, and/or global health experiences.

Improving exposure to primary care throughout medical school can help increase the number of students who choose primary care after graduation. When interested students are recruited to careers in medicine, the next step is for the medical school curricula to maintain and enhance their drive to service and desire to practice primary care. Redesign is needed in both the formal and informal curricula. Medical schools should review their educational processes and environments to ensure that they incent the choice of specialties needed to meet physician workforce needs and actively work to remove activities and experiences that create disincentives for these choices.

Enhancing the formal curriculum includes the incorporation of more outpatient experiences and ensuring that a required part of clinical training takes place in community-oriented health clinics, such as Rural Health Clinics (RHCs) and Community Health Centers (CHCs). Lessons can be learned, from osteopathic schools and existing primary care tracks in allopathic schools, about the optimal distribution of outpatient and inpatient experiences. Training residents in underserved settings such as CHCs is a contemporary approach to promoting primary care practice in shortage areas. CHCs are federally funded primary care clinics that care for patients who are uninsured or underinsured. A study comparing residents trained in CHCs versus non-CHCs showed that CHC-trained family physicians were almost twice as likely as their non-CHC trained counterparts to work in underserved settings after concluding their training [115].

Such an expanded track dedicated to service formed the core concept of COGME's Eighteenth Report's proposal of the United States Public Health Medical Schools (USPHMC), a proposal for a new system of public health and community health-oriented medical education. The USPHMC would consist of a national system of schools that specifically addresses the shortage, maldistribution, and lack of diversity in the physician workforce by targeting the societal concerns of health disparities, public health issues, and emergency preparedness. Tuition for medical school would be waived in lieu of subsequent service [116]. The 100th anniversary of the Flexner Report is an ideal opportunity to add momentum to the USPHMC concept and to push for reexamination of issues such as the integration of public health, financing of education, and recruitment and retention in primary care.

In addition to reform efforts for the formal curriculum, there is also a need for change in the informal curriculum. Primary care interest groups have existed for decades as an outlet and informal gathering setting for medical students; participation in these groups has been shown to increase interest in primary care careers. Curricular additions on topics such as health systems reform further enhance student interest in systems improvement and instill interest in primary care practice and leader-

ship. Recent studies have demonstrated that global health experiences also stimulate interest in primary care. More investigations should be done into the effect of pilot projects in the informal curriculum and programs should be implemented based on this evidence.

2. Expand medical school class size strategically to address the primary care physician deficit and maldistribution issues.

While there are significant external influencing factors impacting student specialty choice, changes in admission processes can increase the numbers of and improve the placement of primary care providers. For example, in setting class-size expansion, mechanisms should be explored for admitting a greater number of qualified students who would more likely choose a primary care specialty. Finding these students may require identification of regional- or medical school-specific attributes that are more likely to yield students that will select primary care specialty choice. Successes at many local programs may be difficult to replicate more broadly. To support this, there also should be strategic investment in early pipeline student programs, such as summer educational enrichment experiences in undergraduate and high schools to increase non-traditional student interest in medicine with specific emphasis on primary care.

In addition, it is important to support development of faculty who will teach primary care and serve as mentors. Mentoring is an approach that has long been used in many organizations to attract and retain employees. Faculty members who are satisfied in their careers make better role models for students considering careers in primary care.

3. Reform admission processes to increase the number of qualified students more likely to choose a primary care specialty and to serve medically vulnerable populations.

Research shows that certain factors are correlated with students' inclination to choose primary care [117]. Among these factors are being a member of the minority population, having worked previously in an underserved setting, and growing up in a similar area (rural and urban underserved areas). More aggressive efforts should be taken to recruit such individuals.

As discussed earlier, coming from a rural background is one of the factors correlated with the choice of entering family medicine [75]. "Pathways programs" have been provided in rural settings to facilitate admission to medical school for rural premedical students by carefully selecting student graduates who show significant interest in rural medicine and proficiency in undergraduate coursework. A 4-week summer program at a medical school in Louisville provides opportunities for students to shadow physicians practicing in rural settings, participate in tutorials in the sciences, learn concepts of community assessment, and apply for early assurance admission to medical school [118]. However, as the number of schools planning and implementing such programs increases, attention to attrition becomes more important. In a review of previously published studies these same authors conclude that attrition is a result of maturation that naturally occurs with resultant change of career plans; those seeking medicine for non-service (intellectual challenge) reasons drop out earlier, as other careers materialize; physicians offer input that patient gratitude is not forthcoming and paperwork is excessive; and pre-med advisors paint a picture of medical school and practice that is too demanding [118].

4. Recruit and retain underrepresented minority students and faculty members.

The nation's health professions have not kept pace with the changes in demographics. There is evidence that the disparity between the proportion of minorities in health professions and those in the general populations contributes to disparities in health care outcomes that persist for minorities. Organizations such as the Sullivan Commission have outlined proposals to recruit more minorities to a career in medicine [119].

While there were 4,167 Caucasian resident physicians in ACGME-accredited and GME programs on duty in the area of family medicine, there were only 598 African-American, 60 American Indian/Alaska Native, and 819 Hispanic-origin physicians in that field. These same numbers for internal medicine were 8,673 Caucasian, 1,219 African-American, 47 American Indians/Alaska Natives, and 1,824 of Hispanic origin [120]. Thus, despite the fact that underrepresented minorities tend to select primary care disciplines, only 15 percent of family medicine residents and 14 percent of internal medicine residents are underrepresented minorities.

In an effort to promote interest in and prepare disadvantaged students for medical careers, the Stanford Medical Youth Sciences Program provides academic enrichment in medical sciences to high school students from very low-income backgrounds and underrepresented minority groups [121]. The 5-week summer residential program offers classroom instruction, courses in anatomy, hospital field placements, research projects, and advising on college admissions. Direct exposure to science, mentoring, preparation for college admissions, and guidance in long-term careers has been effective in increasing the number of underrepresented students in the health care professions. Murray-Garcia and Garcia describe medical school pipeline strategies focusing on underrepresented minority students in kindergarten through 12th grade, which aim to make these students more qualified as medical applicants [122]. Programs employ interventions such as role modeling, motivation, academic enrichment, research apprenticeships, and academic partnerships be-

tween public school districts and medical schools. The authors claim that issues of culture and identity must also be addressed for these programs to be effective. A preliminary evaluation suggested that the program increased matches in family medicine at a time when matching in that discipline was declining nationally.

The Affordable Care Act reauthorizes funding, effective FY2011, for several programs under the Centers of Excellence and Health Care Professionals Training for Diversity sections, including revisions of the formulas used for funding allocations.

5. Require block and longitudinal experiences of sufficient length that medical students clearly understand the essential functions of primary care and the medical home.

As discussed in the preceding section, block experiences should be of sufficient length that the medical student gains experience to understand the essential functions of primary care and the medical home. GME funding should be reformed in such a way that both government and non-government payers are involved. Additionally, GME funding should be redirected to support community Teaching Health Centers training primary care physicians.

6. Collaborate with local communities and distribute resident training accordingly, support reductions in physician income disparities, and lead in the development of new models of practice.

Residents whose training includes exposure to community settings are more likely to practice in such settings. Collaborating with local communities can help reduce some of the barriers to effective community–based training. Such barriers can include higher costs, limited space, and limited availability of instructors. By collaborating with local communities to address these barriers, more residents will be exposed to community settings. Such residents are more likely to practice primary care.

The Affordable Care Act authorizes increased funding for Community Health Centers effective beginning FY 2011 (The Affordable Care Act, Sect. 5313). This new authority awards grants through the Centers for Disease Control and Prevention (CDC) to support community health workers that promote positive health behaviors in medically underserved communities.

7. Reform the continuum of medical education, from premedical training through continuing education, to impart general competencies most efficiently and promote the choice of careers in primary care.

Increasing the effectiveness of medical school primary care experiences in academic health centers where there is a dominance of non-primary care specialties poses a unique but not insurmountable challenge. Primary care clerkships in family medicine, general internal medicine, and pediatrics should create additional contemporary ambulatory teaching venues through academic/community partnerships with private practices, CHCs, and residency programs in rural and urban settings to increase student exposure, understanding, and appreciation of community-based primary care. To accomplish the needed expansion in primary care experiences for most medical schools would require the recruitment, development, and support of community physician faculty networks capable of providing the curricular components of required clinical courses in a diversity of contemporary clinical settings and locales. The Affordable Care Act authorized funding for development of Teaching Health Centers and allocated funding to support training in existing centers.

A program aimed at fostering student interest in family medicine targets entering first-year students and incorporates curricular, extracurricular, summer, and career planning components [123]. The Family Medicine Student Track (FaMeS) pipeline program at Boston University Medical School includes components such as placements with family physicians in the student's first or second year, preference given to family medicine sites in clerkship match and summer externships, and workshops focusing on a variety of careers in family medicine.

Potential innovations for the transformation of the medical education curriculum need to focus more on public health, systems reform, and primary care. An example is a concept that was recently developed by the Lake Erie College of Osteopathic Medicine (LECOM). LECOM is starting a 3-year medical school curriculum called the Primary Care Scholars Pathway (PCSP). PCSP selects students who commit to primary care careers and channels them through a tailored 3-year curriculum, rather than 4-year curriculum, with the expectation that the students will enter residency training in family medicine, general internal medicine, or general pediatrics. The curriculum emphasizes primary care clinical experiences beginning in the first year, integration with community service, and mentorship. In lieu of tuition, the students commit to at least 5 years of primary care practice following residency training [123].

The success of the 3-year primary care track in LECOM will provide instructive lessons as efforts are made to incentivize primary care career tracks. Not only will it provide more information on the benefits of specialized, primary care tracks in undergraduate medical education, but it will also inform the current discussions on ideal length of training. Workforce researchers have argued for years that one way to quickly increase the supply of physicians is to reduce the number of years of training. Already medical schools such as Duke University require 3 years of formal education; even more "traditional" allopathic schools have relatively flexible fourth years. The fourth year of medical school is designed to be a time for medical students to explore other

interests and take elective courses. It could be argued, though, that for students planning to enter a career in primary care, the fourth year of academic instruction could be waived. The shortening of medical education can help relieve workforce constraints and serve as an incentive for students to enter primary career in cases where medical education debt is a serious detractor from entering the profession.

Schwartz and colleagues advocate directing training grant funds to schools with track records of producing primary care medicine graduates, development or expansion of primary care fast track programs where students are ensured preferential admission to generalist residency programs in underserved areas, increased investment in primary care research, and increased funding for faculty development and fellowship training in primary care [124]. Further, medical schools should consider the reallocation of intrinsic resources to support course development and implementation that responds to defined physician workforce needs.

In summary, the medical schools' emphasis on the whole patient, continuous and comprehensive care, and chronic disease management should be one of the themes embedded in and ongoing throughout the curriculum to provide students with insights into the care of the whole patient, family, and community – essential elements of primary care. These educational experiences should occur early and be reinforced and built upon through the optimal mix of inpatient and outpatient experiences. Students should have ample opportunities to be exposed to population- and practice-based research that emphasizes the translation of new knowledge into community practice. In addition, medical schools should explore increased rural health and global medicine education activities since there is evidence suggesting that students selecting these course activities are more likely to enter primary care specialties.

8. Provide increased incentives for physicians who practice primary care or other critical specialties in designated shortage areas.

As noted in the introduction, there is a severe and worsening shortage of primary care providers, in the U.S., particularly in rural and other underserved areas [7]. The existing shortage of primary care physicians and other health care professionals has been exacerbated by a decline in student interest in entering primary care disciplines in recent years. As indicated previously, there are numerous reasons for this including relatively low compensation compared to subspecialists, heavy workload, and lifestyle issues such as professional isolation. With the aging population, health care reform, and the implementation of new models of health care delivery, the need for primary care physicians has sharply increased. Consequently, more powerful incentives are needed to encourage medical students to enter primary care and to practice in designated shortage areas. These include strategies such as implementing admission processes that favor applicants with an expressed interest in primary care, ongoing and expanded support for NHSC programs that offer substantial scholarships and loan repayments or forgiveness to those who work in underserved locales, payment mechanisms that result in more equitable compensation, efforts to address lifestyle issues such as professional isolation through new technologies, and emphasis on rural training tracks and rotations that better prepare trainees for rural and underserved practice.

The Affordable Care Act authorizes increased funding for the NHSC scholarship and loan repayment program, allows part-time service and teaching time to qualify toward the NHSC service requirement, and increases the annual NHSC loan repayment amount from $35,000 to $50,000 effective beginning in FY 2011. It also reauthorizes and increases funding for multiple Title VII health professions and diversity programs, and public health and physician training under Title VII effective beginning FY 2011.

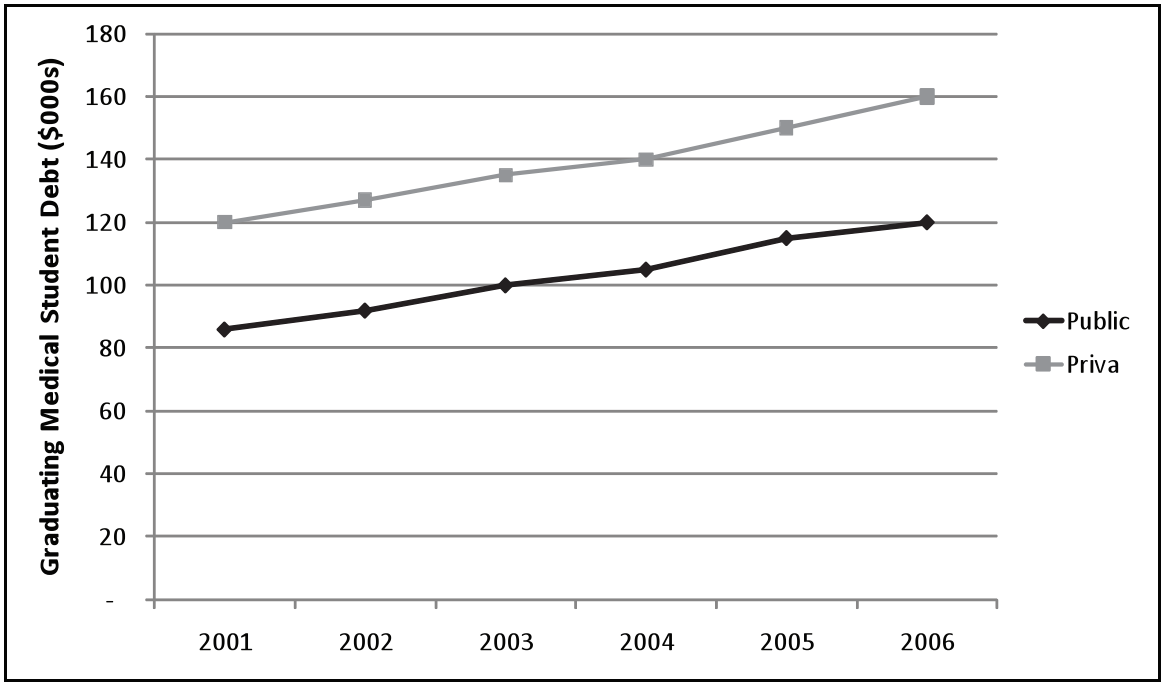
Several states are also focusing on medical workforce needs. New Jersey, for example, has established a new Center for Medical and Health Workforce Planning to guide the allocation of its resources based on needs. Idaho has established collaborative relationships with medical schools and GME programs in Washington and Utah to support its future physician workforce needs. Similar initiatives exist in other states.

9. Substantially enhance funding for scholarships, loans, loan repayment, and tuition waiver programs to lower financial obligations for students who plan and choose careers in primary care.

As discussed earlier, increasing educational debt has a negative impact on primary care specialty choice. Medical students fund a large proportion of the cost of their medical education through educational loans. The median indebtedness of medical school students graduating in 2006 was expected to be $120,000 for students in public medical schools and $160,000 for students attending private medical schools. Approximately 29 percent of all medical students will graduate with debts of $200,000 or more [95]. Osteopathic physicians graduated with similar mean debts of $134,000 for public schools and $154,000 for private schools in 2006 [125]. Given the disparities in physician income and high debt burdens at graduation, jobs in specialty fields are more attractive to new physicians. Financial incentives such as loan repayment can help to decrease the impact of debt.

The Affordable Care Act includes loan repayment tax exclusions. Certain state-funded student loan repayment programs that are intended to increase the availability of health care services in shortage or underserved areas,

Figure 14: Medical Student Indebtedness



Source: Association of American Medical Colleges, 2004 [126]

along with the payments from NHSC loan repayment programs, are excluded from federal income taxation. In addition, the Health Care and Education Reconciliation Act amends the Income-Based Repayment Program to cap student loan payments for new borrowers after July 1, 2014 to 10 percent of adjusted income (rather than 15 percent) and would allow remaining debt to be forgiven after 20 years of payments (rather than 25 years).

More resourceful loan repayment programs should be created at both state and federal levels to decrease the potential financial disincentives facing medical students who choose primary care specialties. Students' escalating educational debt, when combined with the prospect of a specialty choice with lower potential income, makes primary care specialty choices less attractive. Because it is difficult to predict the evolving interests of students in medical schools, loan repayment programs should be targeted to post-medical school periods such as the primary care residency and the immediate practice period post-residency to incentivize primary care residency choice. The United States Public Health Service Core Expansion could help to address the primary care physician needs of vulnerable patient populations, especially since these programs are experiencing over-subscription. Debt relief provided by service obligations also increases the likelihood that students will eventually choose a primary care specialty. Other debt relief measures such as community-based sponsorships, tax credits, reductions in the amount of time in training, and higher primary care GME salary base warrant exploration. Expansion of educational debt relief programs could play an important role in securing an appropriate primary care physician workforce even if these efforts only sustain interest and/or target special populations where physician recruitment faces substantial challenges.

Benefits of Adopting this Recommendation

- The premedical and medical school environment has a strong influence on the specialties that medical students eventually enter and thus has a mission to provide the types of opportunities that generate commitment to primary care and preparation for this type of practice.
- Primary care can be revitalized and interest in this discipline rekindled by enhancing the medical education pipeline, redesigning the medical school curriculum, and reforming the medical education environment.
- Policies aimed at debt management will stem the decline in entry into primary care practices resulting from the lower reimbursement for primary care compared to other specialties.
- Incentives for entering primary care practices in underserved areas will address critical health workforce needs across the nation.

4. GRADUATE MEDICAL EDUCATION

Recommendation: GME payment and accreditation policies and a significantly expanded Title VII program should support the goal of producing a physician workforce that is at least 40 percent primary care. This goal should be measured by assessing physician specialty once in practice rather than at the start of postgraduate medical training. Achieving this goal will require a significant increase in current primary care production from residency training and major changes in resident physician training for the practice environment of the future.

Congress, the Administration, Department of Health and Human Services, accrediting agencies, and private insurers should:

1. Change regulations to support more training in outpatient settings and innovation in practice models to prepare residents appropriately for an evolving contemporary health care environment. The Affordable Care Act authorizes more flexibility for GME programs to count training in outpatient settings and didactic and scholarly activities towards GME payments.
2. Strategically increase the number of new primary care GME positions and programs to accommodate the increased production of medical school graduates and respond to the need for a workforce composed of at least 40 percent primary care physicians.
3. Increase training in ambulatory, community, and medically underserved sites by:

- Promoting educational collaboration between academic programs and Federally Qualified Health Centers (FQHCs), rural health clinics (RHCs), and the National Health Service Corps (NHSC);
- Implementing new methods of funding to include reallocation of existing GME funding, new GME funding that is not calculated according to Medicare beneficiary bed-days, and substantial expansion of Title VII funding specifically for community-based training. The Affordable Care Act authorizes increased funding for Community Health Centers beginning in FY 2011.

4. Provide financial incentives for GME that:

- Directly provide GME funding to primary care residency programs, educational consortia, or non-hospital community agencies to provide the proper incentives for ambulatory and community-based training;
- Explore augmenting payments for primary care residents, including differentially higher salaries and early loan repayments, to decrease the negative impact of educational debt on primary care specialty choice;
- Fund all primary care residency programs at least at the 95th percentile level of funding for all programs nationally (using total direct medical education [DME] and indirect medical education [IME] payments as a basis); and
- Reward teaching hospitals, training programs, and community agencies financially on the basis of the number of primary care physicians produced, to be determined by specialty in practice and not at the initiation of training.

Rationale: Graduate medical education is central to development of the workforce. Federal policies are needed to redesign GME to meet existing challenges. There are opportunities to improve training paradigms to respond adequately to the primary care physician workforce deficit, which could be further exacerbated by elements of health care reform.

Problem / Opportunity for Improvement

Situation

The specialty mix of physicians coming through the GME pipeline is not aligned with the requirements of maintaining an efficient, high-quality, health care system. Primary care physicians are essential to a well-functioning delivery system, yet in recent years there has been a trend toward increased specialization [127]. To respond to this and the current small increase in medical school class size requires an increase in the size of existing primary care GME programs and the development of new programs. These GME programs could be sponsored by traditional institutions, such as hospitals and other clinical settings where patient care, administrative, and potential faculty resources are appropriate to provide substantial components of GME. Educational partnerships with these community-based clinical venues to promote increased primary care GME training require incentives to hospitals and non-traditional sponsors as well as removing regulatory disincentives.

Many large hospitals have developed GME programs to support their complex care programs. The GME programs of these large teaching hospitals are effective in recruiting physicians to the medical staff and building subspecialty clinical care; however, increasing subspecialization rates have resulted in fewer physicians entering generalist careers [10]. Moreover, a broad-based trend toward fewer work hours among physicians based on an analysis of U.S. Census Bureau data from 1976-2008 and their relationship to physician fees may also alter the physician workforce landscape, with implications for health care reform implementation [128].

The pattern of GME growth reveals that most new GME positions are subspecialty fellowships. Although Medicare capped its funded GME slots in 1997, at a time

when an oversupply of physicians was being projected [40], the accredited GME positions grew 6.3 percent from 2003 to 2006, virtually all of which are self-funded by the hospitals. Of these new positions, less than half are subspecialty training and fellowships [10,40]. These fellows can assist attending physicians, cover inpatient services independently, and serve as future medical staff recruits for complex care. Primary care trainees fulfill none of these criteria.

All GME payments from CMS are awarded to hospitals. Therefore, at many levels, GME payments have been used to foster the clinical enterprises of the teaching hospitals, which are largely devoted to complex subspecialty care. There is little to no incentive in GME payments for education in primary care or in community-based ambulatory settings. Unless the incentives are changed, GME payments will do little to promote interest in primary care education and careers.

GME positions in the U.S. have increased at a steady rate despite the GME cap placed by the Balanced Budget Act of 1997, although from 2002 to 2007, the number of U.S. physicians in primary care specialties decreased by 2,641 [10]. It is likely that GME positions will continue to expand to accommodate the new medical school graduates, and,

> "If positions expand to accommodate growth in new graduates as well as the usual complement of IMGs who enter GME for the first time each year (now about 7,000), the size of the underlying cohort will increase from about 27,000 in 2008 to 31,000 in 2015 and up to 34,000 in 2020"
>
> (Altarum Institute, 2010, p. 6)[42].

Objectives

To achieve the changes required to increase the quantity and quality of GME in response to the needs of the physician workforce requires substantial resource investments.

- Title VII investments are needed to promote primary care GME training initiatives to enhance the quality and number of physicians produced.
- Since there is a strong need for expansion of the primary care physician workforce, it is essential to provide GME payment incentives for hospitals and other primary care GME sponsors to develop and maintain these programs. Programmatic incentives to expand and improve existing GME programs would likewise ensure greater primary care physician production.
- Resources should be identified to create incentives for the involvement of non-academic educational collaborations with community clinical venues necessary to provide the resources to produce a larger number of highly qualified primary care physicians.
- Removing inadvertent restrictions to primary care educational reforms contained in ACGME rules and regulations should be addressed to facilitate novel program development, experimentation, implementation, collaboration, and evaluation.

Analysis

1. Change regulations to support more training in outpatient settings and experimentation with practice models to prepare residents appropriately for an evolving contemporary health care environment.

Traditional medical school training has favored the production of specialists, with an emphasis on provision of inpatient training in the academic medical center setting. Increasingly, ambulatory care training has been provided and clerkships established with primary care mentors at community-based sites, such as Community Health Centers in rural locations. Training in these venues can expose and prepare trainees for the realities of primary care practice in rural and underserved settings. This both equips and encourages trainees to practice in these arenas once they complete their education and training.

With the widespread implementation of innovative models of health care delivery to provide cost effective quality care to our expanding and aging population, residents will need to learn the repertoire of skills sets required for practice in these modalities. A reformed delivery system will require health care professionals trained to provide coordinated care across institutional boundaries. This kind of training is not routinely provided in residency programs today [127]. Such training should include, for example, the key components of the Patient-Centered Medical Home (first contact access, patient-focused care over time, comprehensive care, and coordinated care) and its corollary functions (family orientation, community orientation and cultural competency) and working collaboratively with interdisciplinary teams to provide integrated and coordinated care. As the health care environment and its delivery systems continue to change, so must the training that is provided to future physicians to reflect new payment mechanisms, health care settings and models of care.

2. Strategically increase the number of new primary care GME positions and programs to accommodate the increased production of medical school graduates and respond to the need for a workforce composed of at least 40 percent primary care physicians.

Current GME caps should remain in place while permitting increments in the number of primary care GME positions to respond to the increased physician workforce demands for primary care physicians. COG-

ME's intrinsic reports, "Modeling the Specialty Mix of New Physicians Policy: Implications for Primary Care, 2009" and "Modeling the Primary Care/ Specialists Mix of New Physicians, 2009," suggest that across the board increments in GME specialty caps would disproportionately increase the number of available non-primary care positions. The unintended result could be a net decline in filled primary care positions, especially in cases where applicants had a primary care specialty as their second or third choice. Failure to increase primary care GME positions in the context of increases in medical school graduates will result in decreased access of International Medical Graduates (IMGs) to U.S. GME training programs. The net effect would be larger financial investments in the medical education continuum, which would produce the same number of physicians, albeit with a larger percentage of U.S. graduates. To realize a net increase in physician production with emphasis on primary care requires a continuing involvement of a steady number of IMGs in the U.S. GME programs, with strategic increases in GME positions for specialty training in areas that represent critical deficiencies in the composition of the nation's current and projected physician workforce (e.g., primary care).

COGME's Nineteenth Report, "Enhancing Flexibility in Graduate Medical Education", recommended alignment of GME with future health care needs by increased funding of GME positions as well as strengthening the curricula and structures of GME programs [129].

Under the recently funded Primary Care Residency Expansion (PCRE) Program, the number of primary care physicians is anticipated to increase by expanding enrollment in primary care residency programs, beyond CMS authorized GME caps. This is a $168 million, five-year program, aimed at increasing the number of residents trained in a primary care specialty (family medicine, general internal and general pediatric medicine). The program's purpose is to increase the number of primary care physicians by expanding enrollment in primary care residency programs. The new residency training positions must be over and above the number currently being trained, even if a program is already over its Centers for Medicare and Medicaid Services (CMS) authorized GME cap.

3. Increase training in ambulatory, community, and medically underserved sites.

Among students in the GME pipeline, too few are drawn from rural areas and inner cities, which may mean a reduced propensity to practice in these often underserved areas. Studies show that residents tend to select practice locations that are similar to where they grew up and where they trained [127]. There have been calls for Congress to broaden the definition of educational training venues beyond the inpatient setting to better prepare physicians for community-based primary care practice [40]. Educational access to these needed community clinical venues could be facilitated by changes in GME funding policies and regulations that currently disincentivize training in non-hospital ambulatory settings. Promoting educational collaboration with Federally Qualified Health Centers (FQHCs) and rural health clinics (RHCs), and the National Health Service Corps (NHSC) represents important potential resources to support primary care GME activities sponsored by hospitals. The Affordable Care Act authorized funding for development of Teaching Health Centers and allocated funding to fund training in existing centers. There are examples of CHCs that have the internal infrastructure for primary care GME sponsorship if associated with appropriate partners (e.g., hospitals) and if CMS rules defining GME sponsorships were changed. Other clinical venues that could support elements of expanded GME could include private practices, HMOs, and private health systems not currently engaged in GME. These new venues must be prepared to foster the development of new models of contemporary primary care delivery. For instance, training in Patient-Centered Medical Homes can help prepare residents for the realities of actual contemporary practice.

Primary care clerkships in family medicine, general internal medicine, and pediatrics should create additional relevant ambulatory teaching venues through academic/community partnerships with private practices, CHCs, and residency programs in rural and urban settings to increase student exposure, understanding, and appreciation of community-based primary care. To accomplish the needed expansion in primary care experiences for most medical schools would require the recruitment, development, and support of community physician faculty networks capable of providing the curricular components of required clinical courses in a diversity of clinical settings and locales.

4. Provide financial incentives for GME.

The single most important way Medicare can influence the mix of physicians being produced by the GME system is to reform how it pays for services [127]. Significant change in the method of GME funding is needed. Currently both DME funding and IME funding for medical education are provided by Medicare and some Medicaid programs and are paid directly to teaching hospitals. The Medicare Payment Advisory Commission (MedPAC) has noted that there is not a significant incentive to train physicians in outpatient and community settings and in settings which tend to serve medically vulnerable populations; furthermore, there are not appropriate incentives for primary care training, and the current system of GME funding does not ensure the training of physician leaders who will play an active role in health system reform. Thus, Congress should revise the way GME is funded to support the production of an

appropriate primary care workforce. As discussed above, success in producing primary care providers should not be based on the number of students entering primary care. Instead it should be based on placement of graduates five years after medical school to determine which are still in primary care, either in practice or in training. Support paid directly to primary care residency programs and non-hospital community agencies would provide financial incentives for ambulatory and community-based training.

While the Medicare Modernization Act in 2003 authorized redistribution of Medicare GME funding for residency positions outside of teaching hospitals, with priority given to rural hospitals, residency programs had to be already established to receive this redistribution, and furthermore, many programs that benefited from this change were already above their cap [10].

Legislation was introduced to Congress to modify the existing gap in policy but the scope of this policy was limited to only 24 states and the formula and rules for creation of new residency positions were complex [40]. This legislation failed to receive support from teaching hospitals since they would not benefit from this shift in policy. Positions added to teaching hospitals after the Medicare cap was imposed increased the number of subspecialty fellowships, yet increasing the number of first postgraduate year positions does not necessarily increase the number that enroll in primary care programs [40]. While the AAMC has advocated free determination by medical students and physicians concerning the areas of medicine they wish to pursue and the decisions made by GME programs and teaching hospitals about specialties of residency training positions, a 2008 report by the Association of Academic Health Centers calls for major reforms that recognize broader societal concerns as well as an integrated and comprehensive national health workforce policy [40].

With growing recognition of the decreasing number of students pursuing careers in primary care, groups such as MedPAC have supported efforts to tie future federal support of GME to training in particular specialties and consideration of approaches that would use Medicare GME and indirect medical education subsidies to promote primary care, including allocating shares to nurse practitioners and physician assistants [40].

HRSA recently announced the Expansion of Physician Assistant Training Program (EPAT) under the authority of the Affordable Care Act. The program's purpose is to increase student enrollment in primary care PA programs and graduates planning to practice primary care specialties. Funding from this program will fund approximately forty primary care physician assistant training programs [130].

Benefits of Adopting this Recommendation

- Increasing the number of new primary care GME positions and programs will increase the proportion of medical school graduates entering primary care practices.
- Implementing strategies known to promote and reward primary care and service in underserved settings—such as providing training sites in community and medically underserved areas, fostering medical partnerships between academic programs and community-oriented health care facilities, eliminating restrictive regulations, reallocating GME funding to primary care residencies, providing financial incentives for the production of primary care physicians, and changing ACGME regulations to support ambulatory care training—should serve as significant incentives for medical student graduates to choose to enter primary care practices.

5. THE GEOGRAPHIC AND SOCIOECONOMIC MALDISTRIBUTION OF PHYSICIANS

Recommendation: So long as inequities exist, policies should support, expand, and allow creative innovation in programs that have proven effective in improving the geographic distribution of physicians serving medically vulnerable populations in all areas of the country.

Congress and the Administration should:

1. Ensure funding of the National Health Service Corps at the $1.15 billion amount authorized by the Affordable Care Act so that the NHSC can recruit more primary care physicians, provide greater support of scholarship recipients, create special learning opportunities and networks for scholarship recipients and early loan repayers, and forge formal affiliations with academic institutions and training programs.
2. Increase the funding for Title VII, section 747, to $560 million in Primary Care Medicine and Dentistry cluster grants.
3. Implement programs to increase funding by the Agency for Health Care Research and Quality (AHRQ), National Institutes of Health (NIH), and private research enterprises for projects that stimulate primary care and community-based research and emphasize methodologies such as population-based ecological and cluster studies, qualitative behavioral studies, and comparative effectiveness research.
4. Increase funding for Community Health Centers (CHCs) that are committed to training students and residents, and increase funding for Area Health Education Centers (AHEC) programs to improve existing programs, support new programs, and support innovative funding proposals that promote the practice of primary care in medically underserved areas.

Rationale: Primary care physician maldistribution in the U.S. has been a long-standing and persistent challenge in spite of recurrent attempts to ameliorate it with targeted physician workforce and health care financing policies as well as undergraduate and graduate medical education programmatic interventions.

The Affordable Care Act authorizes re-distribution of 65 percent of current unused GME residency slots to qualifying hospitals to address physician shortages, especially in rural and other underserved areas. A hospital that qualifies for an increase in residency positions would have to maintain its base level of primary care residents and ensure that at least 75 percent of the additional positions are in primary care or general surgery residencies.

Problem / Opportunity for Improvement

Situation

Primary care physician maldistribution in the U.S. has been a long-standing and persistent challenge, in spite of recurrent attempts to ameliorate it with targeted physician workforce and health care financing policies as well as undergraduate and graduate medical education programmatic interventions. The NHSC estimates that 50 million Americans live in health professional shortage areas (HPSAs). This problem, impacting both rural and urban underserved areas, can be attributed to multiple factors including inadequate reimbursement rates for primary care services, medical school debt load, geographic isolation, lifestyle preferences, and lower rates of health insurance coverage in rural and inner city areas [83,132].

Objectives

Addressing the geographic and socioeconomic maldistribution of the primary care workforce will require providing incentives for clinicians to practice in underserved areas, educating more students who are more likely to practice in underserved areas, conducting research that will facilitate community-based practice, and providing support for Community Health Centers.

Analysis

1. **Ensure funding of the National Health Service Corps at the $1.15 billion amount authorized by the Affordable Care Act so that the NHSC can recruit more primary care physicians, provide greater support of scholarship recipients, create special learning opportunities and networks for scholarship recipients and early loan repayers, and forge formal affiliations with academic institutions and training programs.**

The maldistribution of physicians related to geographic areas and medically vulnerable populations should be addressed by providing incentives for physician practice, medical student education, and graduate medical education training in sites located in CHCs, rural health centers, and primary health care shortage areas. The NHSC has been successful in providing such incentives.

Key stakeholders of the NHSC, including the Office of Management and Budget (OMB) and the GAO have concluded that NHSC placements have improved service levels and have resulted in retention of many providers in underserved areas. Medical students with NHSC scholarships are much more likely to become primary care physicians, to practice in underserved areas, and to practice in a Community Health Center [133,134,135,].

Many interventions at the local, regional, and national levels have yielded positive results, but the ultimate patient outcomes of these interventions may not be palpable in communities with an inadequate number of primary care physicians. Saxon and Johns recently reported on the success of the NHSC and made recommendations for expansion [136]. Currently more than 3,800 NHSC clinicians practice in rural and urban communities serving about 4 million individuals. However, approximately 50 million Americans live in communities with a shortage of health professionals.

With increased funding, the NHSC could play a much greater role in shaping the health system of the future and meeting the health needs of the population in the United States. For example additional funding could be used to:

- Develop closer links to academic medicine for medical student training and for graduate medical education residency and fellowship training. The requirements for NHSC participation and scholarships should be changed to maximize these opportunities and to inhibit barriers between academic and community settings. Time spent teaching medical students and residents should count toward service time, and efforts should be made to include full-time faculty members for NHSC scholarships.
- Make clinical innovations in practice that will attract both providers and patients. The NHSC should implement the elements of the Patient-Centered Medical Home.
- Give higher scholarship stipends and student loan repayments, including full student loan forgiveness programs that will make it easier for medical students who will enter primary care and general surgery residencies to then make a significant commitment to national service[136].

2. Increase the funding for Title VII, section 747, to $560 million in Primary Care Medicine and Dentistry cluster grants.

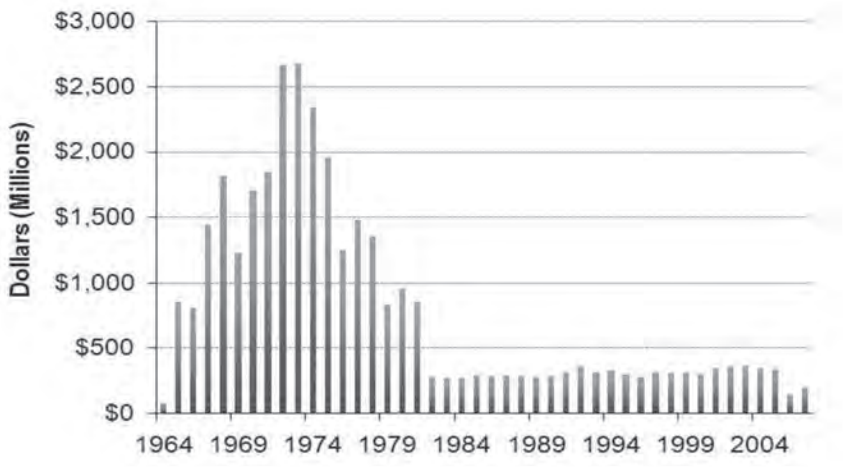
Title VII, section 747 has led to improvements in primary care education, workforce capacity building, and faculty development. It has helped to identify and disseminate best practices to programs, accrediting bodies, and other stakeholders. Title VII, section 747 is the only HHS program aimed directly at training primary care physicians. These section 747 grants have permitted the development of innovative programs that are generalized to the larger educational experiences of medical students and residents. They spur the development of curricula in community-oriented primary care and provide clinical training sites where physicians learn to serve vulnerable populations. More importantly, these grants are the foundation for programs that train academic leaders of the future who are more likely to instill in their students an understanding of the importance of Patient-Centered Medical Homes and a sense of obligation to serve communities and populations.

Researchers and key stakeholders have recognized the contributions of the Title VII programs. For example:

- In 2002, the Robert Graham Center for Policy Studies reported in a study that students who attended medical schools that received Title VII, section 747 funding were more likely to practice primary care in a rural area or in a HPSA [137].
- Krist found that Title VII of the Health Professions Education Assistance Act is the only federal program that has increased the production of primary care physicians who serve medically vulnerable populations [138].
- Reynolds and Rittenhouse and colleagues concluded that Title VII, section 747 funding has played a significant role in developing the primary care workforce by providing funds for primary care education, faculty development, and the creation of innovative primary care curricula and models of care [133,139].
- Davis and colleagues and Newton and Arndt found that Title VII, section 747 contracts awarded to national primary care organizations have led to increased innovation in ambulatory care education [140,141].
- The Congressional Research Service found a deleterious effect on services to the medically vulnerable when Title VII funds were lost [142].
- Rittenhouse and colleagues, in an examination of the impact of Title VII training programs on staffing of Community Health Centers, found an association between physicians attending Title VII-funded medical schools and practicing in CHCs and/or participating in the NHSC [133].
- The Institute of Medicine characterized the Title VII programs as an "undervalued asset" [143].

Yet, over the past 4 decades, there have significant cuts in funding for the Title VII programs. Funding is currently less than a fifth of what it was, in real terms, in the early 1970s. These reductions in funding have significantly undermined the ability of the program to continue to make contributions to the nation's primary care workforce development.

Figure 15: Title VII Funding (in 2008 Dollars)



Source: Kolsky, 2009 [144]

In order to address the significant challenges associated with the emerging primary care physician shortage, increased funding is needed to expand and enhance primary care training programs.

3. **Implement programs to increase funding by AHRQ, NIH, and private research enterprises for projects that stimulate primary care and community-based research and emphasize methodologies such as population-based ecological and cluster studies, qualitative behavioral studies, and comparative effectiveness research.**

Outcome-based measures using methodologies such as population-based ecological and cluster studies provide an alternative to traditional methods of assessing physician supply adequacy and practice models. Such research could evaluate the comparative effectiveness of alternative approaches on different populations based on assumptions about population characteristics, size of health care workforce and infrastructure [42].

Research is currently lacking related to the most common, acute, chronic, and co-morbid conditions, which primary care physicians address on a daily basis. Primary care physicians are in the best position to design and implement research focused on the common clinical questions confronted in practice. Funding should be increased both for the training of primary care researchers and for this type of clinical research. Such training is necessary to impart critical research skills to the primary care workforce and to contribute to the body of knowledge necessary to put primary care on a similar footing with other specialties that have established research infrastructures. AHRQ supports research to improve health care quality, reduce costs, advance patient safety, decrease medical errors, and broaden access to essential services.

There is a need for solid research that can be generalized and expanded. Using methodologies such as population-based ecological and cluster studies, qualitative behavioral studies, and comparative effectiveness research should be encouraged. AHRQ is in a perfect position to support the type of research most commonly conducted by primary care physicians and strongly needed in this country to optimize health outcomes.

AHRQ has played an important role in improving the quality, safety, efficiency, and effectiveness of health care in the U.S. Through its research programs, it supports health care IT, facilitates development of an evidence base for best practices, and promotes collaboration and dissemination. Research in these areas is leading to significant improvements in health care outcomes. For example, a study funded by AHRQ's DEcIDE (Developing Evidence to Inform Decisions about Effectiveness) research network reported that heart disease patients ages 65 and older who receive stents coated with medicine to prevent blockages are more likely to survive and less likely to suffer a heart attack than patients fitted with stents not coated with medication. The findings provide important new evidence for decision-making by heart disease patients and their physicians [145]. AHRQ recently initiated a study as part of its efforts to eliminate hospital-acquired infections that currently result in at least 30,000 deaths and excess costs of over $9 billion per year. Results of this study can be disseminated; the result is substantial improvement in outcomes and cost savings through the health care system. Additional funding for AHRQ would provide additional resources in research priority areas such as measures of value, cost, and efficiency; methods, modeling, and data sources for tracking value and impact; impact of consumer incentives; impact of regulatory changes; impact of Medicare, Medicaid, and the State Children's Health Insurance Program (SCHIP); and impact of publishing reporting strategies.

4. **Increase funding for Community Health Centers (CHCs) that are committed to training students and residents, and increase funding for Area Health Education Centers (AHEC) programs to improve existing programs, support new programs, and support innovative funding proposals that promote the practice of primary care in medically underserved areas.**

Increasing the effectiveness of medical school primary care experiences in community settings and academic health centers can increase the percentage of students who choose careers in primary care. Since physicians are more likely to practice in settings to which they have been exposed as students, increasing students' exposure to community-based settings increases the chance they will ultimately practice in such settings. In addition, using Community Health Centers as sites of ambulatory medical education increases the probability that students trained there will select primary care as their specialty.

However, high costs at community-based sites including those associated with travel costs and space constraints create challenges for community-based training, compared to inpatient hospital-based training. Increased funding can offset those higher costs and create more opportunities for student exposure to enhance understanding and appreciation of community-based primary care. Such funding could be used for the recruitment, development, and support of community physician faculty networks capable of providing the curricular components of required clinical courses in a diversity of contemporary clinical settings and locales.

Current federal cash match guidelines for AHECs are restrictive and do not contain specific allowances for medical schools or academic health centers to create innovative student support programs that foster entry into medical school or other health care programs. Since most AHECs are located in rural or underserved areas,f lexibility in these guidelines could significantly incentivize medical schools to work with these communities to attract their students into primary care.

Benefits of Adopting this Recommendation

- The NHSC can provide greater support of scholarship recipients, improving learning opportunities that will make them more likely and better prepared to practice as primary care providers.
- Increased funding Title VII, section 747 funding will lead to increased capacity for training of primary care physicians and will enhance students' exposure to underserved areas, which helps increase the proportion of graduating students entering primary care and serving in underserved areas.
- Better research of effectiveness and dissemination of best practices will improve health care outcomes and help to contain costs.

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