

Remaking Primary Care:

A Framework for the Future



January 2010



Acknowledgements

Authors: Erin Mann, Brian Schuetz and Emily Rubin-Johnston
Editors: Wendy Everett, ScD, Nick King and Jennifer Handt

This report was made possible through a grant from the Josiah Macy, Jr. Foundation. The Foundation supports programs designed to improve the education of health professionals in the interest of the health of the public, and to enhance the representation of minorities in health professions.

The authors would like to thank George E. Thibault, MD, President and Marc A. Nivet, EdD, Chief Operating Officer of the Josiah Macy, Jr. Foundation for their guidance and support throughout this project. This report would not have been possible without the assistance all of the practitioners, researchers, educators and administrators who so generously offered their time and expertise.

The views expressed herein are solely those of the New England Healthcare Institute and not intended to represent the individual viewpoints of our sponsors, members or advisors.

About The New England Healthcare Institute

The New England Healthcare Institute (NEHI) is a nonprofit, health policy institute focused on enabling innovation that will improve health care quality and lower health care costs. Working in partnership with members from across the health care system, NEHI brings an objective, collaborative and fresh voice to health policy. We combine the collective vision of our diverse membership and our independent, evidence-based research to move ideas into action. For more information, visit www.nehi.net.

Table of Contents

Executive Summary	2
Introduction	5
Project Methodology	5
Defining Primary Care.....	6
- What is Primary Care?	6
- Who Practices Primary Care?.....	6
The Evolution of Primary Care: An Unfulfilled Promise.....	7
- Modern Origins.....	7
- The Hope and the Reality	7
Drivers of the Crisis.....	9
- Demand: Aging and Chronic Illness.....	9
- Supply: Primary Care Workforce Shortage	10
- Drivers of the Shortage	15
The Consequences: Decreased Patient Access and Lower Quality of Care.....	18
- Decreased Patient Access	18
- Decreased Patient Satisfaction/Quality of Care.....	19
Promising Innovations to Strengthen Primary Care.....	21
- Service Delivery Improvements	21
- Site of Care Changes.....	24
- Workforce Enhancements.....	25
- Reimbursement Changes	26
- Health Profession Education Changes	28
Primary Care Education in Action: Collaborative Education.....	32
- Benefits of Collaborative Education	32
- Tactical Approaches to Promote Collaborative Education	32
- Barriers to Implementing Collaborative Education.....	33
- Consensus Principles	33
Impact of Health Care Reform on Primary Care	36
- More Patients in a Strained System	36
- New Models for Payment	36
- Increasing the Provider Supply.....	37
Looking to the Future	38
Appendix I: Selected Sources	39
Appendix II: Experts Interviewed	44
Notes and References.....	46

Executive Summary

As U.S. policymakers pursue major reform proposals to improve the quality and affordability of health care, primary care – the foundation of all care delivered in the United States – is in a state of crisis. While physicians, patients, insurers and opinion leaders remain concerned about the crisis, the pursuit of a single solution has been elusive due to the wide range of causes fueling the crisis. Yet growing evidence suggests that a strong primary care system is directly related to superior health outcomes in other nations, and that the improvement of primary care in the U.S. would produce both health and economic benefits. Thus, identifying innovations to strengthen our primary care system would help to advance the goals of all stakeholders in pursuing reform.

Through this report, NEHI seeks to highlight the root causes of the crisis in primary care; identify innovations that could enhance its quality and efficiency; and explore changes required in the education of health professionals to better serve the practice of primary care.

Key Findings: Root Causes of the Crisis

The crisis in primary care is the result of the confluence of a rising demand for primary care services and a decreasing supply of professionals providing these services.

The rising demand is driven by a dramatic shift in the demographic makeup of the United States, with the number of adults aged 65 and older on the rise. The burden of chronic illnesses – which disproportionately affect older adults – is expected to grow significantly with this demographic shift, resulting in an overwhelming demand for primary care services.

On the supply side, declining interest among health professionals in practicing primary care has created what many believe is a national shortage of providers. NEHI identified two trends negatively affecting the supply of primary care physicians: the income gap and growing provider dissatisfaction.

Key Findings: Consequences to Health Care Delivery

The combined impact of increased demand for primary care services and decreased supply of practicing professionals has been felt directly by patients through decreased access and compromised quality of care.

- **Decreased Patient Access** – The supply-and-demand factors driving the primary care crisis impact patients' ability to access needed primary care services. The implementation of health reform measures to increase the number of insured individuals has also resulted in increased demand for primary care, and many practices are no longer accepting new patients. This lack of access has resulted

- in the increasing use of less appropriate settings, such as the emergency department, for primary care services.
- Decreased Patient Satisfaction/Quality of Care – Even for patients able to access care, the patient-provider relationship appears to be eroding. As pressure to see ever-larger numbers of patients has increased, providers have increasingly less time to address the complex needs of older, sicker patients. As a result, patients are not receiving the best possible care.

Key Findings: Innovative Solutions for Better Primary Care

The implementation of high-value innovations could dramatically improve primary care delivery in the United States.

- Service Delivery Improvements – the use of innovative approaches in the delivery of primary care – including the Patient-Centered Medical Home, Chronic Care Model, shared medical appointments, open access scheduling and health information technology – would help improve patient care coordination, access and patient satisfaction.
- Site of Care Changes – Alternative sites of care beyond traditional doctors’ offices, including retail clinics, worksite wellness centers and home visits, as well as the use of other tools such as pre-visit preparation packets, would make care more accessible for patients.
- Workforce Enhancements – Redefining primary care as a team activity and refocusing the roles of all types of primary care practitioners would help better address patient needs, with a greater number of professionals – beyond physicians alone – able to provide primary care services.
- Reimbursement Changes – Aligning reimbursement with high-value encounters through payment-based innovations such as pay-for-performance, bundled payments, global service payments, accountable care organizations, and payment for phone and email encounters would improve quality by shifting the priority of payment from services delivered to outcomes achieved.
- Health Profession Education Changes – Reforms to health professions education – including efforts to increase the numbers of students interested in primary care practice and the redesign of curricula and residency programs with an emphasis on team-based care – would help alleviate the shortage of primary care practitioners and better prepare future practitioners for new models of care practice.

In particular, the promotion of collaborative education – through which doctors, nurses and other practitioners learn side-by-side – is critical to future practitioners’ ability to address patient needs as part of a team. Through expert interviews and a summit of deans of leading medical and nursing schools, NEHI identified several factors key to the successful implementation of collaborative education programs, including the use of interdisciplinary centers, reformed admissions policies to identify team-conducive

qualities, engagement of institutional leadership and development of demonstration projects to empirically support team-based learning.

Looking to the Future

The continued focus on national health reform – and the ultimate implementation of reform proposals current and future – could create a double-edged sword for primary care. While many of these proposals, including both the House and Senate bills, include measures to increase the primary care workforce and better align payment with quality, they would also seek to increase access by expanding health insurance coverage. This would result in more patients seeking care in an already-strained primary care system. Innovative solutions, such as those detailed in this report, will be required to counter this demand spike and help the primary care system achieve its original promise of providing quality care as a foundation of all health care delivered in the United States.

Introduction

As health reform continues to be debated among policymakers, the prognosis for primary care – the foundation of all health care delivered in the United States – remains dire. According to the American College of Physicians, we face an “impending collapse of primary care.” The *New York Times* has declared a “crisis of care on the front line of health.” As with any complex condition, there is no single cause of, nor solution to, all of primary care’s ills. This report highlights the range of root causes of the crisis in primary care, identifies a set of innovations that could enhance the quality, efficiency and effectiveness of primary care, and discusses changes required in health professional education to better serve the practice of primary care.

The Crisis in Primary Care: Key Findings		
Causes	Consequences	Innovative Solutions
<ul style="list-style-type: none">• Demand: Aging and Chronic Illness• Supply: Primary Care Workforce Shortage• Drivers of Shortage:<ul style="list-style-type: none">○ Income and Reimbursement Gaps○ Provider Dissatisfaction	<ul style="list-style-type: none">• Lack of Patient Access• Low Patient Satisfaction• Poor Quality of Care	<ul style="list-style-type: none">• Service Delivery Improvements• Site of Care Changes• Workforce Enhancements• Reimbursement Changes• Health Professions Education Changes

Project Methodology

The research for this report was conducted in three major stages. In order to gather general background on the current state of primary care practice and the prevailing opinions on the crisis in the field, a broad review of the literature was conducted. This was done using PubMed to identify articles published in the past 15 years that directly addressed the root causes of the crisis, yielding over 75 articles. A full list of these articles is provided in Appendix I. Next, a scan of Internet-based sources, including websites of professional associations and federal agencies and national physician and patient surveys, was required to identify quantitative data pertaining to the current state of primary care. Finally, interviews were held with 44 experts spanning the primary care spectrum – practicing physicians and nurses, medical and nursing school deans, researchers, representatives from the major professional associations, and employers. A full list of experts interviewed is included in Appendix II. In these interviews, experts were asked to provide their thoughts on the most pressing challenges facing primary care and the most promising innovations that could be adopted widely to redesign primary care.

Defining Primary Care

What Is Primary Care?

For purposes of this work, NEHI used the American Academy of Family Physicians' (AAFP)¹ three-pronged definition of primary care:

- Primary care providers offer a wide range of services including diagnosis and treatment of acute and chronic illnesses, disease prevention services and patient education.
- A primary care practice serves as the patient's first point of entry into the health care system.
- A primary care practice is the continuing access point for all needed health care services.

Who Practices Primary Care?

While many types of physicians and other health care professionals may periodically provide primary care services as defined above, this paper focuses on providers for whom primary care services represent the *majority* of their practice. Practically speaking, these providers include medical doctors, osteopathic doctors, nurse practitioners and physician assistants who work in general and family practice, general internal medicine and general pediatrics. In expert interviews, these fields were most often mentioned as comprising primary care and are also designated as "primary care" fields by the Health Resources and Services Administration (HRSA).²

The Evolution of Primary Care: An Unfulfilled Promise

Modern Origins

Primary care as a distinct field of medical practice is a relatively modern development, although even this short history has been marked by significant changes. Originally, the delivery of medical care was the province of the general practitioner, who treated all ills in small community practices. In the post-World War II period, this traditional model was pushed aside by the explosive growth of specialist and sub-specialist physicians, fueled by scientific and technical advances.

In response to the growth of the specialties, the new concept of primary care as a field unto itself became a major focus of health care in the United States in the 1960s. The term “medical home” was first coined by the American Association of Pediatrics in 1967 and family medicine was established as a specialty in 1969. At its inception, primary care in its ideal form – comprehensive, continuous and coordinated care – was seen as easily attainable. In 1978, with the international health community also engaged in the promotion of primary care, the World Health Organization convened the International Conference on Primary Health Care in Alma-Ata, Kazakhstan. The Alma-Ata Declaration, formulated at the conference, affirmed that primary care should be the “central function and main focus” of a health system, leading many nations around the world to develop domestic health care systems with strong emphasis on primary care.³

In the 1980s, the rise of managed care and capitation elevated primary care physicians to new heights as coordinators of care, but eventually led to unwelcome perceptions of primary care physicians as gatekeepers, more of a hindrance than help. Despite the original hope, the field of primary care never reached its full potential. The tide continued to shift toward specialist care, and systems including training and reimbursement began to favor specialists.

Today, nearly a half century since its inception, primary care, and the promise it offers, is back at the top of health care priorities in the United States and considered a key component of emerging health reform efforts.

The Hope and the Reality

A growing body of evidence suggests that a strong, high-quality primary care system is directly related to superior health outcomes in other nations, and that the improvement of primary care here in the United States would produce both health and economic benefits. A recent review of studies, largely from the United States, found that an increase of one primary care physician per 10,000 population correlated to a reduction in average mortality of 5.3 percent per year.⁴ Other research has found that the fundamental pillars of primary care – comprehensive, continuous and coordinated care – are associated with better health behaviors, including the increased use of screening, immunization and

health habit counseling.⁵ In financial terms, studies have also shown a link between strong primary care and decreased per-capita health spending in the United States.⁶

Despite the optimism of years past and the evidence of the enormous potential of primary care, the promise of a robust primary care system in the United States has fallen short. The system is seen by practitioners and patients alike as inefficient, fragmented and expensive. The next section of this report identifies the range of factors contributing to this failure of today's primary care system.

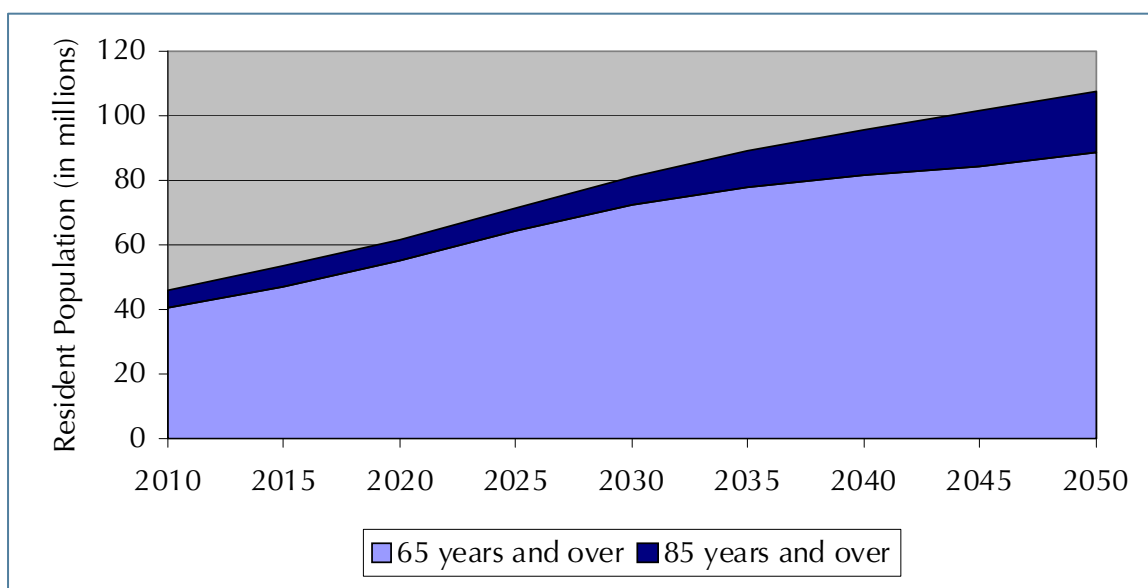
Drivers of the Crisis

The crisis in primary care is the result of the confluence of a rising demand for primary care and a decreasing supply of professionals providing these services. The increases in demand coincide with the beginning of a major demographic shift in the United States: an aging population increasingly plagued by chronic diseases. The demand-side challenges are set against a climate in which primary care professionals, unhappy with their lower relative incomes and with the current state of practice, are avoiding entering the field or leaving the practice of primary care altogether.

Demand: Aging and Chronic Illness

Due to a significant decrease in birth rates and a significant increase in life expectancy over the past century, the demographic make-up of the United States has shifted dramatically. Consequently, the percentage of individuals aged 65 and older is expected to jump from 12.7 percent of the total U.S. population in 2008 to over 20 percent of the total U.S. population in 2050 (See Figure 1).⁷

Figure 1: Projected U.S. Population by Age: 2010-2050

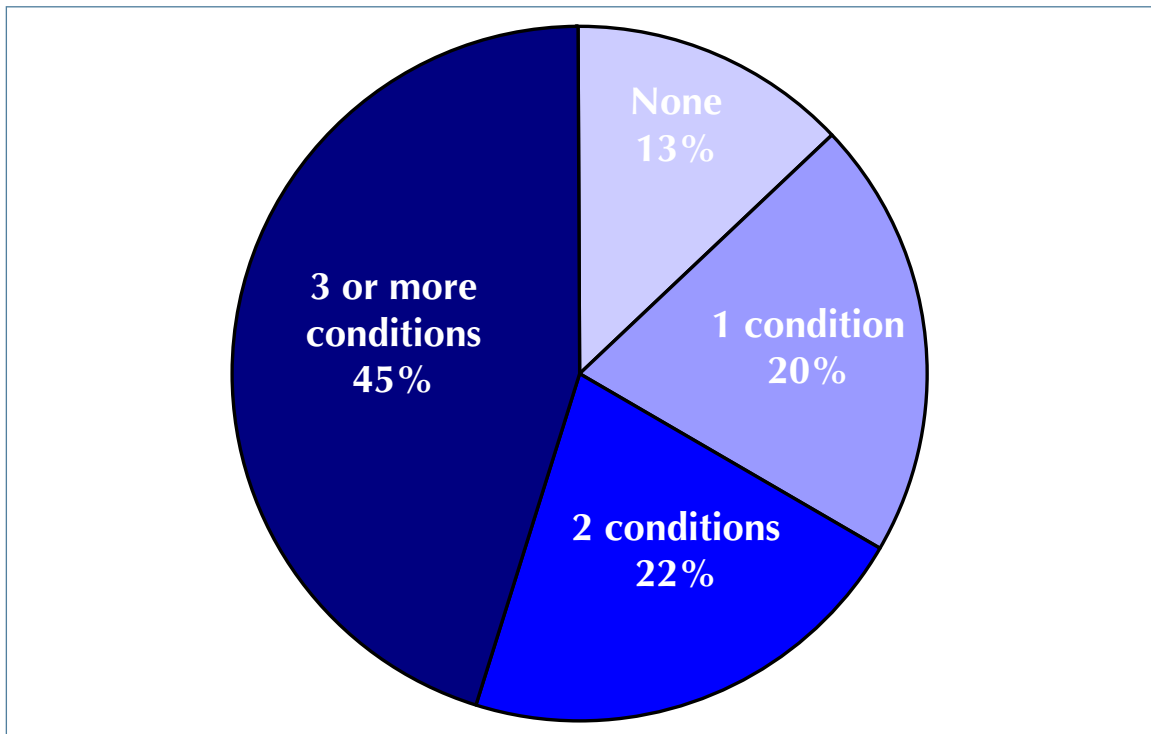


Source: 2008 National Population Projections, U.S. Census Bureau

As the population ages and the number of older Americans grows, so will the burden of chronic illness, which disproportionately affects older individuals. As depicted in Figure 2, recent data indicate that increasing numbers of Americans are living with *multiple* chronic illnesses; currently, 87 percent of Americans aged 65-79 live with at least one chronic condition and 45 percent suffer from three or more.⁸ With overall chronic illness prevalence expected to increase by 42 percent between 2003 and 2023, the numbers of

Americans suffering from chronic conditions will continue to grow significantly.⁹ The largest increases are expected in patients with cancer, diabetes and hypertension.

Figure 2: Individuals Aged 65-79 with Chronic Conditions



Source: Paez, K., Zhao, L., and Hwang, W. (2009). Rising out-of-pocket spending for chronic conditions: a ten-year trend. *Health Affairs*: 28(1):15-25.

The growing demand for health services to treat chronic illnesses has already increased the workload for primary care professionals, magnified by a shift in where chronic care is provided. In the past, the majority of chronic illness care was provided in hospitals. Today, much of that care is provided in ambulatory settings. This trend is expected to increase and will continue to stress the primary care system's resources.¹⁰ Many analysts are concerned that the supply of primary care professionals will be unable to keep pace with this demand.

Supply: Primary Care Workforce Shortage

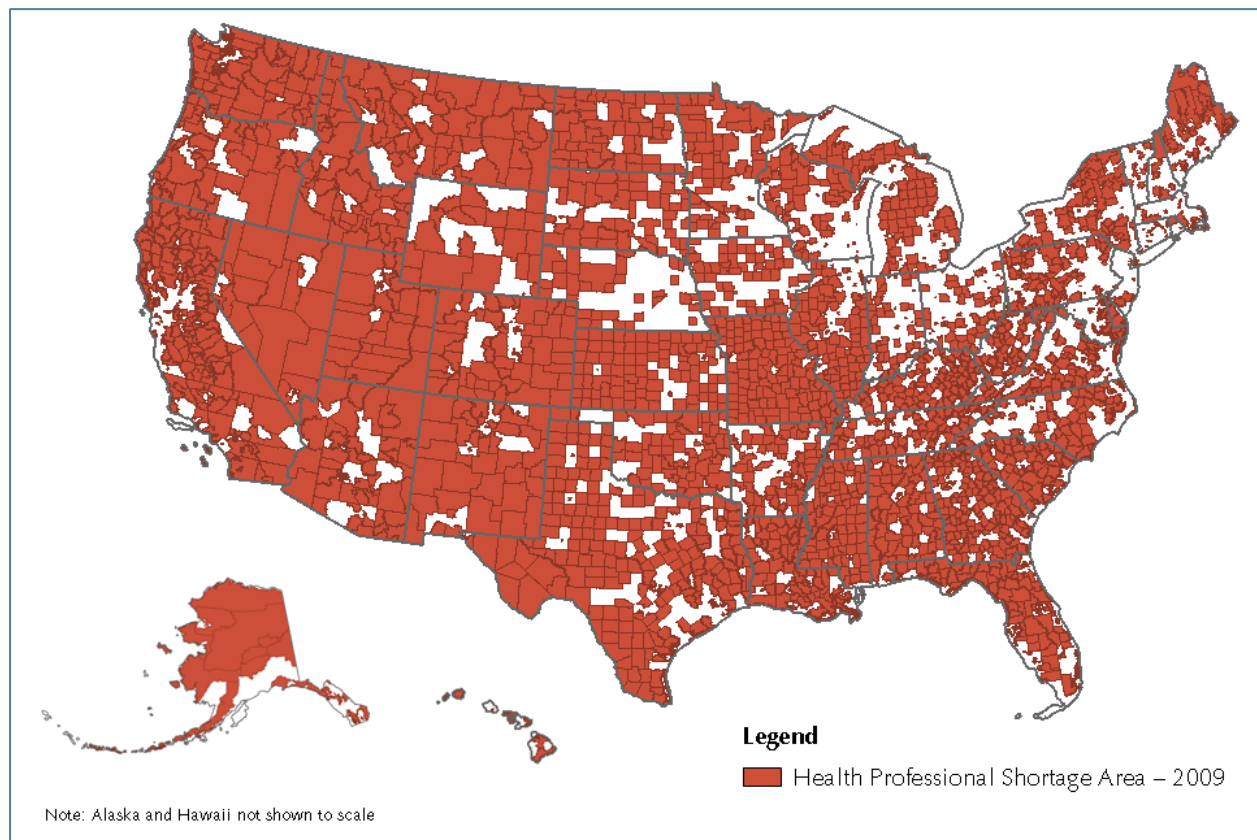
The primary care workforce is made up of a diverse group of health professionals. Direct patient care is provided by allopathic and osteopathic doctors, nurse practitioners, physician assistants and registered nurses. Other health professionals including pharmacists, nutritionists, social workers and medical assistants also provide services within the primary care environment. An adequate supply of all of these health professionals will be required to meet the future demand for services.

- [Understanding the Physician Shortage](#)

Prior to the rise of specialized medicine, primary care was the main source of medical services in the United States. However, according to data from the American Medical Association, the proportion of all physicians practicing primary care has decreased from an estimated 50 percent in 1950 to just over 30 percent in 2007, driven by growth in the specialty fields outpacing growth in primary care. As a result, there is a widespread belief that a national shortage of primary care physicians exists.

The statistical reality of this perceived shortage is more complex. Data show that nationally, there are approximately 90 primary care physicians (PCPs) per 100,000 population – an adequate supply based on the Health Resources and Services Administration (HRSA) definition of a shortage.¹¹ However, HRSA-defined shortages do exist on the regional level and within sub-populations. As shown in Figure 3, rural communities face a major supply challenge, having substantially fewer primary care physicians per capita compared to urban areas (55 PCPs per 100,000 in non-metropolitan areas vs. 93 PCPs per 100,000 in metropolitan areas). Approximately 7,000 additional primary care physicians are currently needed in these primary care Health Professional Shortage Areas to bring physician ratios up to HRSA standards.

Figure 3: Primary Care Shortage Areas

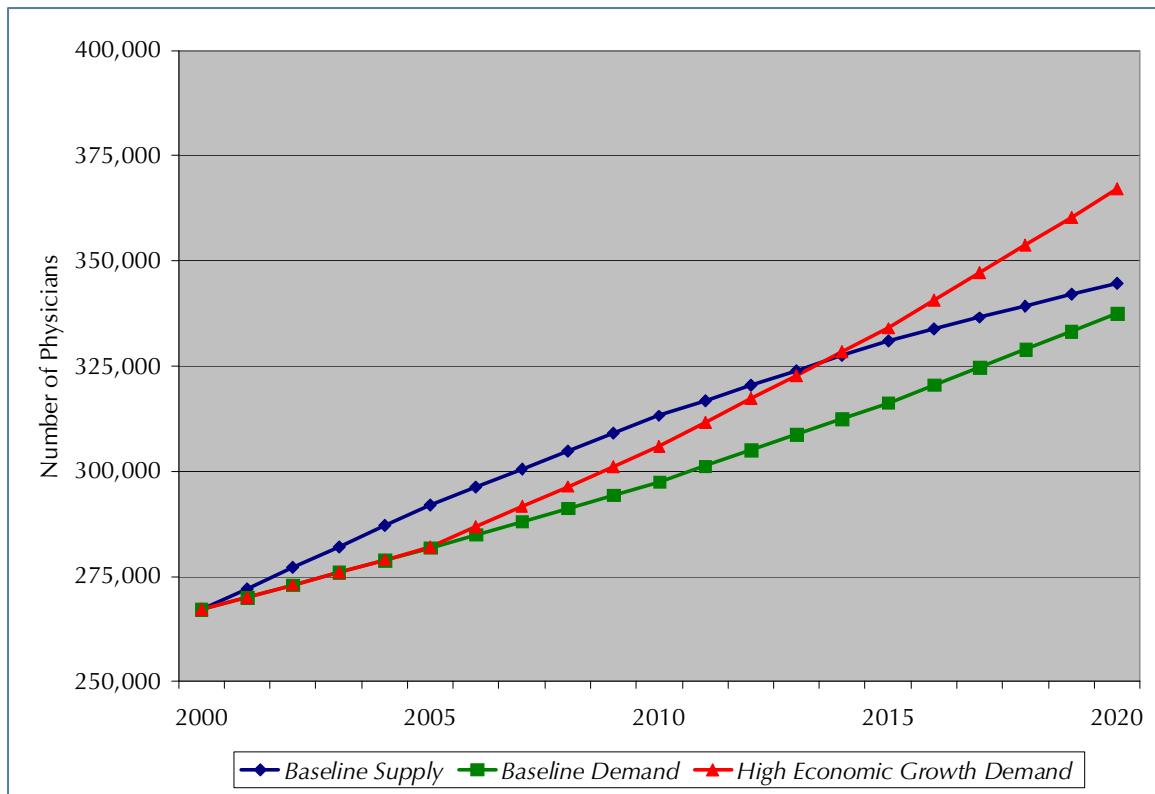


Data Source: Health Resources and Services Administration, January 2009. Map generated using Interactive Map web application, Center for Applied Research and Environmental Systems, University of Missouri.

The full picture of the primary care provider shortage comes into even sharper focus when examining future workforce projections. In late 2008, HRSA released an in-depth analysis of the projected physician workforce over the next several years. The basis of the analysis is a model designed to predict physician supply and patient demand between the years 2000 and 2020. The model assumes that supply and demand were balanced in 2000 and makes its future predictions based on several components, including the current physician workforce, trends in medical school graduates and residency choice, direct patient care hours, population projections, and insurance distribution.

According to the model, the number of full-time-equivalent (FTE) primary care physicians in clinical practice, including residents, will reach 344,710 in 2020. This represents an increase of 18 percent between 2000 and 2020. As for demand, the model includes a number of different projections. Under “baseline demand,” population growth and aging are taken into account, but it is assumed that utilization of health care services will not change in the future and any impacts of health care reform on primary care demand are not included. Under this projection, the number of primary care physicians required to meet demand is expected to be 337,400, an oversupply of roughly 7,000 primary care physicians. However, under a second, and in our view more realistic, projection, the “high economic growth” model assumes increased demand for physician services. In this model, the number of primary care physicians required to meet demand is expected to be 367,000. This projected supply will be insufficient, resulting in a shortage of over 20,000 primary care physicians. Figure 4 shows the projections under both models.

Figure 4: Growth in Primary Care Supply and Demand



Source: HRSA, The Physician Workforce: Projections and Research into Current Issues Affecting Supply and Demand. 2008.

While the HRSA analysis reaches different conclusions regarding the shortage depending on the demand model, several professional societies are projecting more significant shortages. According to the Association of American Medical Colleges (AAMC), universal health coverage could increase the overall demand for physicians by four percent, while their workforce projections show a shortage of 46,000 primary care doctors by 2025.¹² Similarly, a 2008 report by the American College of Physicians projects a shortage of 35,000-44,000 primary care physicians by 2025.¹³ These models predict that the increasing age of the population and the rising number of patients with chronic diseases will increase family physicians' and general internists' workloads by 29% and that the use of nurse practitioners and physician assistants will not fully supplement the shortfall.

- [The Pipeline: Physicians](#)
 - [Medical Doctors](#)

A 2007 survey of fourth-year medical students found that few were interested in entering the field of primary care, with only five percent indicating interest in family medicine.¹⁴ Of particular note is that while one in four students expressed an interest in internal medicine, only two percent planned to enter general internal medicine, a key source of primary care practitioners. Recent

residency choice trend data also depicts a declining interest in general internal medicine. The American College of Physicians recently reported that among students entering an internal medicine residency, only 20 to 25 percent will choose to enter general internal medicine compared with 54 percent in 1998.¹⁵

- Osteopathic Doctors

Historically, Doctors of Osteopathy (DOs) have been more likely than their allopathic colleagues to practice in primary care. Thus, the substantial growth in the absolute numbers of Board Certified DOs (from 19,419 in 2004/2005 to 22,395 in 2008/2009) has resulted in large numbers of DOs entering primary care practice. Since 2004, the family practice and internal medicine specialties have seen 2,212 and 1,626 DOs, respectively, enter the fields.¹⁶

However this trend may be changing. While the majority of DOs still practice primary care and the DO profession has made clear its commitment to the ideals of primary care, there was a 15.5 percent decrease in the percentage of DOs practicing family medicine between 1984 and 2009. Comparatively, there was a 5.4 percent increase in the number practicing general medicine and a 2.9 percent increase in the number practicing pediatrics.¹⁷ Recent surveys of graduating osteopathic medical students conducted by the American Association of Colleges of Osteopathic Medicine (AACOM) reflect these data, showing interest in primary care slipping from 40 percent in 1999 to only 28 percent in 2007.¹⁸

- The Pipeline: Non-physician Practitioners

- Nurse Practitioners

NPs are principally trained in primary care, and physicians rely on them not only for assistance but also to provide direct patient care; research shows that NPs can provide care for 60 to 90 percent of primary care patients.¹⁹

According to the American Association of Nurse Practitioners, the proportion of nurse practitioners (NPs) working in primary care has held steady at around 60 percent over

... the number of nurse practitioners working in primary care jumped from 44,200 in 1999 to 85,622 in 2005...

the past ten years. A recent analysis of HRSA data found that the absolute number of nurse practitioners working in primary care jumped from 44,200 in 1999 to 85,622 in 2005. This growth was significantly greater than that

observed among primary care physicians and physician assistants during similar time periods.²⁰

- [Physician Assistants](#)

Physician assistants (PAs) are also an integral element of primary care. Their relatively short educational path is structured to prepare them to practice within any specialty, creating a flexible workforce of generalist medical clinicians. Research has found that PAs in primary care perform between 70 to 90 percent of services that their supervising physicians perform, and that their work is both equivalent in quality and well accepted by patients.²¹ A recent analysis of HRSA data found that the number of physician assistants serving in primary care increased significantly between 1995 and 2007, from 12,819 to 23,325.²² However, according to the American Association of Physicians Assistants, the proportion of physician assistants to other practitioners in primary care has declined from just over 50 percent in 1997 to 40 percent in 2009.²³ As with their physician colleagues, physician assistants are shifting to specialties with higher incomes and perceived better working conditions.

- [Registered Nurses](#)

According to data from the Bureau of Labor Statistics, while the majority of registered nurses (RNs) – nearly 60 percent – work in hospital settings, approximately 17 percent of RNs currently work in “ambulatory health care services.”²⁴ While ambulatory care may encompass a range of settings, many of these nurses are practicing in primary care. Between 2001 and 2008, the number of full-time-equivalent registered nurses grew by 476,000. However, the majority of this growth was outside of the ambulatory setting, with 387,000 additional RNs entering hospital-based practice during those seven years. RN employment has increased during the current economic recession, which has helped to ease concerns about a nursing shortage. However, despite employment increases, a recent analysis found that the nursing shortfall is still expected to reach 260,000 RNs by 2025.²⁵

Drivers of the Shortage

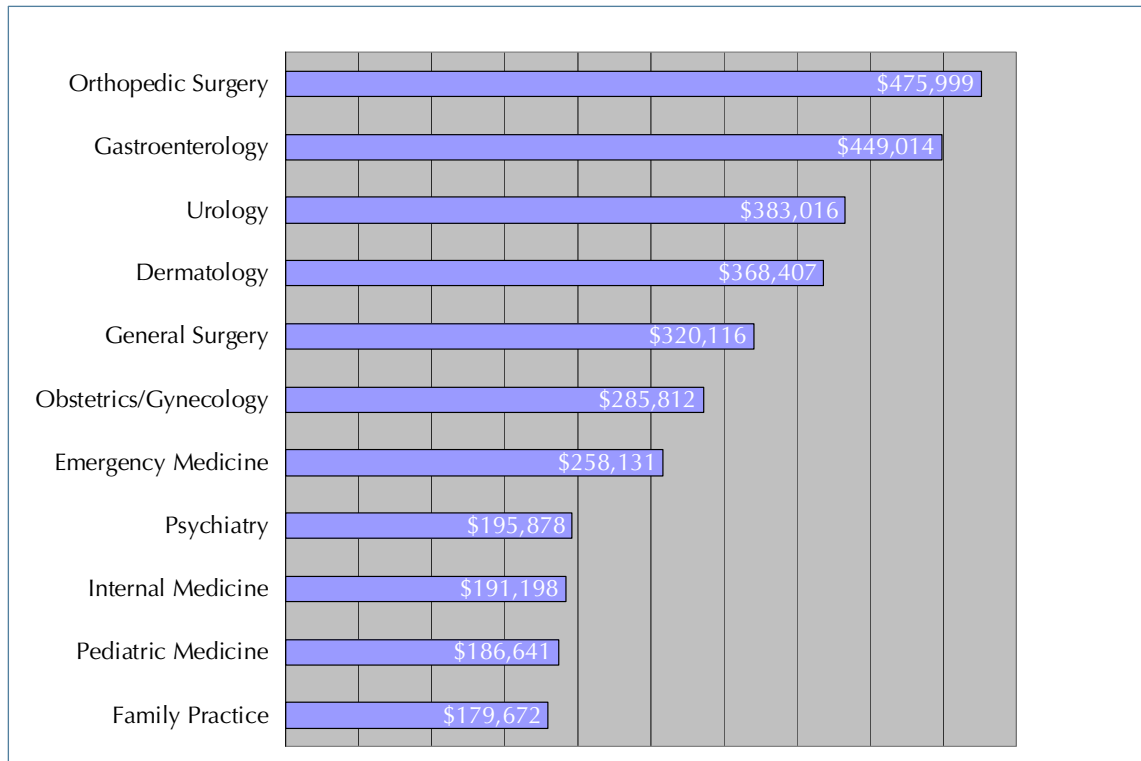
Research and expert interviews identified two key trends negatively affecting the supply of primary care physicians: the income gap and growing provider dissatisfaction with high work loads, long hours and a feeling that their work is undervalued by the health care system.

- [Income and Reimbursement Gaps](#)

The income gap between primary care physicians and specialty physicians, driven by payment differentials, is a key driver of primary care physician dissatisfaction.

According to the Medical Group Management Association Physician Compensation and Production Survey, the three lowest paid fields were family medicine, pediatrics and internal medicine. As shown in Figure 5, the highest paid specialty, orthopedic surgery, brought in three times the income earned by family medicine physicians.

Figure 5: Median Physician Income by Field in 2009



Source: Medical Group Management Association Physician Compensation and Production Survey, 2009

The comparatively low levels of compensation in primary care result from lower reimbursements from payers for primary care services as compared to specialty services. A recent National Health Policy Forum analysis found that the Relative Value Units (RVUs)²⁶ of the Centers for Medicare and Medicaid Services (CMS) fee schedule are weighted more heavily toward the specialties. For instance, the average RVU for one hour of care provided in noninvasive cardiology is 8.7, compared to 4.2 in family practice and 4.0 in internal medicine.²⁷

The impact of the compensation gap was cited by most experts as a key factor in medical students' and medical residents' decisions to practice in specialties, and in practicing primary care physicians' decisions to leave the field. Yet the worst pay-related effects may still lie ahead. In a recent survey, 82 percent of physicians reported that their practices would be "unsustainable" if cuts to Medicare reimbursements were made. The same survey found that only 17 percent of surveyed physicians rated their practices as "healthy and profitable."²⁸

- [Provider Dissatisfaction](#)

Although more difficult to quantify, primary care providers' increasing dissatisfaction with their work is another key factor driving practitioners out of primary care. The passionate, talented and often idealistic professionals who enter the practice of primary care can quickly become discouraged by the increasing complexity of primary care work amid declining working conditions. Primary care physicians are responsible for acute care, chronic care, preventive care, mental health, substance abuse/domestic violence screening, psychosocial needs and family support, requiring an "astonishing" breadth of knowledge according to one of our experts.

“ I feel like I’m a hamster
in a wheel. ”
-Primary Care Physician

Due to both low reimbursement levels and increasing work demands, providers are forced to see more patients and provide more care. Physicians have likened working within these circumstances to being “a hamster in a wheel,” with never-ending patient, paperwork and administrative duties.

This low morale also affects medical students and residents. During their primary care clerkships and rotations, these trainees are often exposed to frustrated primary care physicians, hardly role models to inspire a new generation to practice in the field.

The Consequences: Decreased Patient Access and Lower Quality of Care

The combined impact of increased demand for primary care services and decreased supply of professionals practicing in the field has been felt directly by patients. Whether in the form of practices closed to new patients, long waits for appointments or dissatisfaction with the care they receive, patients everywhere are living with the consequences of the primary care crisis.

Decreased Patient Access

Recent trend data show that the mismatch between supply and demand has begun to impact patients' ability to access needed primary care services. The implementation of health reform strategies designed to expand health insurance coverage has led to an increased demand for services, particularly in primary care, and resulted in access issues for patients. As shown in Figure 6, in the years following health reform enactment in Massachusetts (see sidebar), the percentage of practices reporting their panels closed to new patients rose from 25 percent to 40 percent in family medicine and from 36 percent to 56 percent in internal medicine. Likewise, the average wait time for a new patient to see a doctor rose from 33 days to 44 days in internal medicine.²⁹

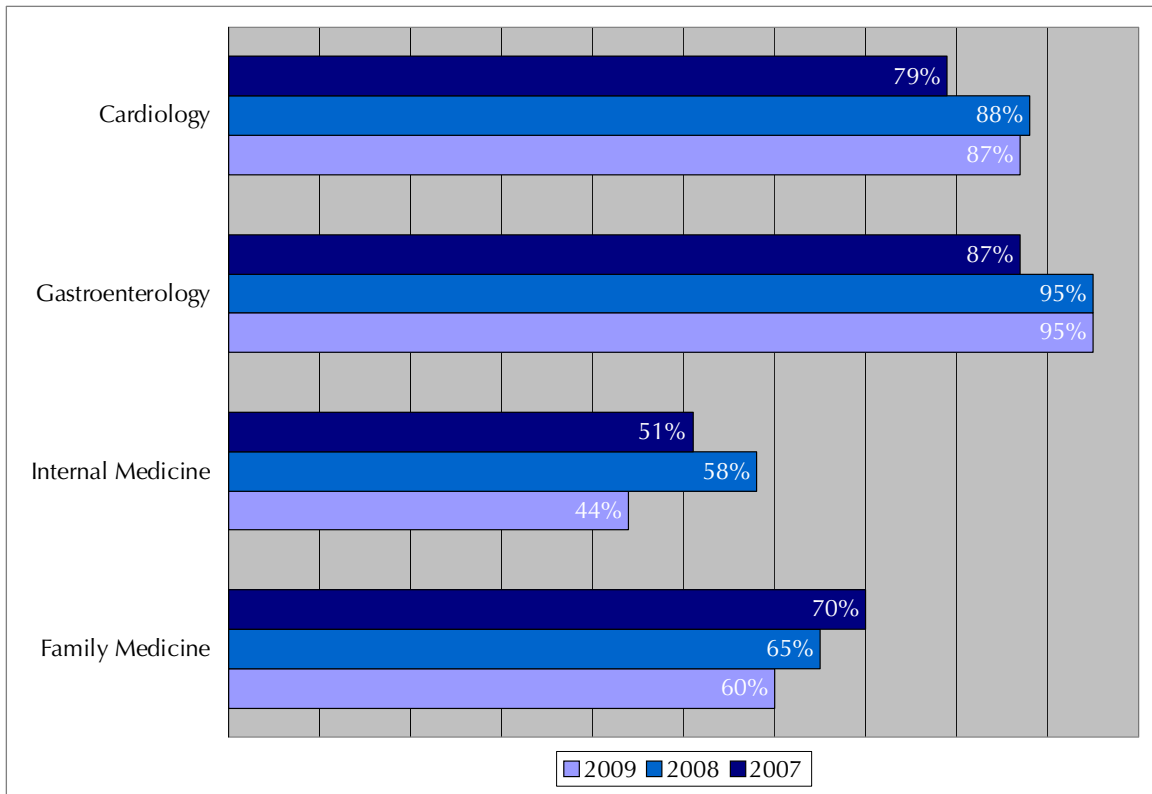
The Massachusetts Health Reform Experiment

The Massachusetts health care reform approach was designed as a stepwise process: expanded insurance coverage followed by enhanced access to care followed by improvements to the quality and efficiency of the care provided. Much of NEHI's work is focused on the latter step related to improving the practice of health care in the United States.

The first phase of the Massachusetts reform experience was widely successful. More than 400,000 residents were added to the rolls of the insured. Yet many of the newly insured are unwilling, or unable, to use the most appropriate care settings. According to a *Boston Globe* article, "a sizable number of patients who obtained state-subsidized insurance have continued to use the ER – at a rate 14 percent higher than Massachusetts residents overall, according to state data compiled at the *Globe's* request. Those state-subsidized patients with the lowest incomes, who formerly received free care in emergency rooms and now pay a nominal fee, are using ERs at a rate 27 percent higher than the state average. The data excluded patients whose injuries or ailments were serious enough to warrant admission to a hospital."

Part of the solution to this challenge is to identify the root causes of non-urgent emergency department use and develop strategies to address these drivers. Another is to reform and refocus the primary care system through reimbursement reform, the development of innovative models of medical education, and the creation of a new model of patient-centered care delivery.

Figure 6: Percent of Massachusetts Practices Accepting New Patients



Source: Massachusetts Medical Society Physician Workforce Study, 2009

Even when panels are open to new patients, access problems persist. Nationally, although 94 percent of office-based primary care physicians recently reported that they were accepting new patients, many acceptances were contingent upon the patient’s expected payment. Only 74 percent of these physicians were accepting new Medicare patients and only 64 percent were accepting new Medicaid patients.³⁰

This lack of access to primary care has spurred the use of less appropriate sites of care by patients, causing unnecessary expense for the health care system. The use of the emergency department for non-urgent care has increased significantly over the past ten years, with the national proportion of total visits classified as non-urgent rising from below 10 percent in 1997 to nearly 15 percent in 2005.³¹ Some experts estimate that nearly half of all ED visits could have been handled in the ambulatory care setting.³²

Decreased Patient Satisfaction/Quality of Care

Even for patients who are able to access care, anecdotal evidence is building that suggests an erosion of the patient-provider relationship. According to one expert, the physician push to see ever larger numbers of patients in order to generate sufficient revenue within the current reimbursement model is a key driver in the weakening of that relationship. The classic fifteen minute visit model has remained the norm, but is viewed as simply

inadequate to address the complex health care needs of older patients and those with chronic conditions. Research has found that for a panel of 2,500 patients, a physician needs to spend 7.4 hours per working day to provide all recommended preventive care plus 10.6 hours to manage all of the patients' chronic conditions.^{33,34}

“ Fifteen minutes is not even close to enough time. ”
-Primary Care Physician

As a result, the quality of care traditionally provided in the primary care setting has also been slipping. Studies have shown that two-thirds of people with hypertension, a condition often managed in primary care settings, are inadequately treated and fully half of all patients do not understand how to take their medications.^{35,36}

Promising Innovations to Strengthen Primary Care

Although the promise of a high-quality primary care system has remained largely unfulfilled, most analysts believe that the potential still exists. A sentiment shared by many experts was that while the crisis in primary care presents a tremendous set of challenges, it also offers a remarkable opportunity for change through the increased use of effective innovations.

Some of the innovations identified below are not new, yet they remain poorly adopted. Given the current political climate and the renewed focus on health reform at the national

“ The current climate represents either an incredible crisis or an incredible set of opportunities. ”
-Physician Administrator

level, many consider the current conditions to be an ideal climate for innovation. The revival of previous approaches and the implementation of a new generation of innovations including service delivery, site of care, reimbursement and educational changes could dramatically improve primary care in the United States.

Service Delivery Improvements

The current system of delivering primary care is seen by most experts as antiquated and inadequate to provide high quality care to today's patient populations. The traditional, fifteen minute physician visit model is considered flawed and primary care practices are regularly described as inefficient. In an effort to address these shortcomings, several innovative service models have been proposed.

- [The Patient-Centered Medical Home](#)

A patient's "medical home" is the clinical setting that serves as the central coordinator of care and provides a range of acute, chronic and preventive medical care services. Care provided within the patient-centered medical home (PCMH) is intended to be accessible, comprehensive, patient-centered, and rely heavily on advanced health information technologies and reformed payment systems.³⁷ Successfully implemented, the PCMH returns the patient to the core of the primary care system and may improve provider efficiency and satisfaction, increase patient access, and improve the quality of care.

According to the Patient Centered Primary Care Collaborative (PCPCC), the medical home concept is currently being piloted at over two dozen sites nationally. While data on the impact of the model on patient outcomes and overall costs have been limited, early evaluations have been promising. Results from PCPCC pilot sites include a 14 percent reduction in hospital admissions compared to controls at Geisinger Health System, a 39 percent decrease in emergency department visits at HealthPartners

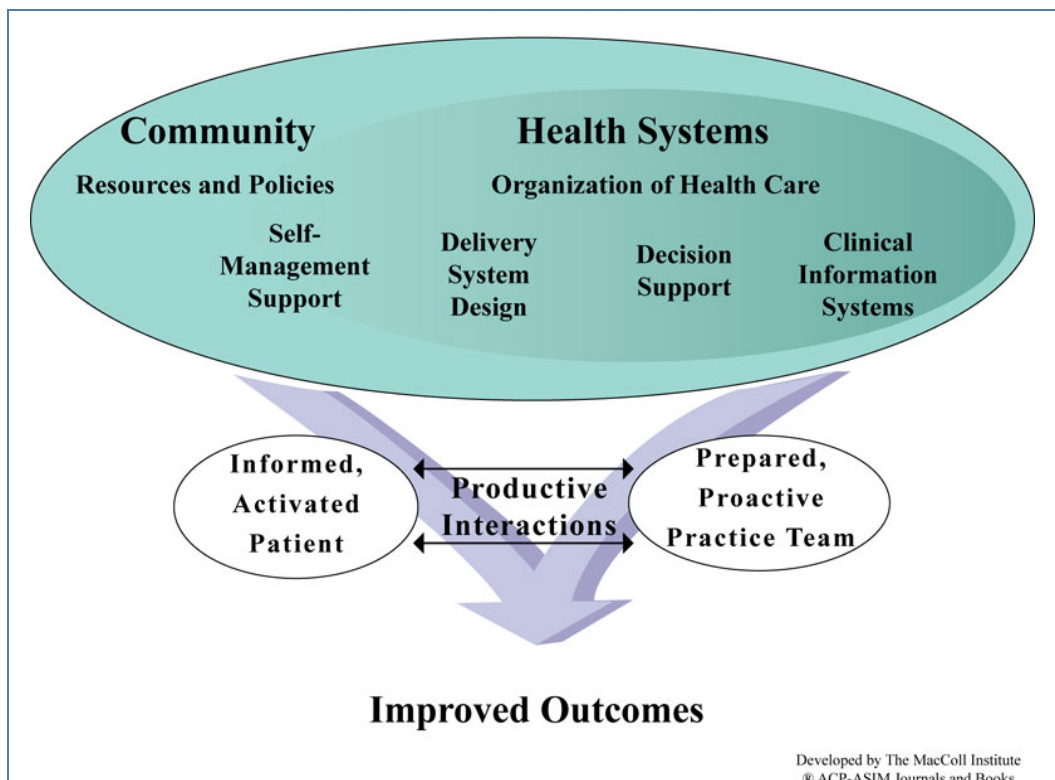
Medical Group, and a net Medicare savings of \$1,364 per patient at Johns Hopkins University.³⁸

- Chronic Care Model

The Chronic Care Model (CCM) was developed to counter many of the current system's deficiencies in the management of chronic diseases. The model, depicted in Figure 7, is based on the idea that effective chronic disease care requires an approach that incorporates patient, provider and system-level collaboration. The model's six components include the community, the health system, self-management support, delivery system design, decision support and clinical information systems.³⁹ Each of these components coalesces to create a patient-centered health team, focused on producing productive interactions and relationships, ultimately leading to better management of the chronic conditions and improved clinical outcomes.

The CCM has been adopted by over 1,500 physician practices in the United States and internationally.⁴⁰ It is currently part of the foundation for both the National Committee for Quality Assurance (NCQA) and The Joint Commission (JCAHO) certification criteria for chronic disease programs, and is a part of new models of primary care proposed by the American Academy of Physicians (ACP) and the AAFP.

Figure 7: The Chronic Care Model



Source: The MacColl Institute.

- [Shared Medical Appointments](#)

In a shared medical appointment, also known as a group visit, multiple patients are seen in a group for follow-up or routine care. These visits provide a secure but interactive setting in which patients have improved access to their physician(s), the benefit of counseling with additional members of a health care team (e.g. behaviorist, nutritionist or health educator), and the opportunity to share experiences, advice and support with one another. Patient-provider time is maximized in this model through the use of non-physician staff to assist with the logistics of the visit.⁴¹

Recent data indicate that shared appointments can improve patient satisfaction, quality of life and quality of care indicators. These data also show that shared appointments can reduce health care utilization as patients incur fewer visits to the ER and appointments with specialists.⁴²

- [Open Access Scheduling](#)

Open access scheduling, also known as advanced access or same-day scheduling, uses information technology to allow practices to offer same-day appointments, often unavailable within the limitations of current systems. Depending on the needs and capabilities of individual practices, these same-day appointments may be available for routine, urgent or preventive visits (or a combination of all three). The result is increased patient access, particularly for acute care, and increased patient satisfaction in the responsiveness of their primary care practices.⁴³

Kaiser Permanente is one of a few health care organizations that have been successful in implementing open-access scheduling; in less than one year, a Kaiser practice reduced the waiting time for routine appointments from 55 days to 1 day.⁴⁴ This timely access to care significantly contributes to the goals of patient-centered care.

- [Health Information Technology](#)

Health information technology (HIT) is a key enabler of model change in the provision of primary care services. Properly implemented, HIT frees up physician time during visits,

American Recovery and Reinvestment Act

The American Recovery and Reinvestment Act of 2009, better known as the “Stimulus Bill,” allocates substantial federal funds for the development and expansion of HIT. All told, the package provides \$19.2 billion in funding for a variety of technology implementation projects, including:

- \$17.2 billion for financial incentives to physicians and hospitals through Medicare and Medicaid to promote use of electronic health records and other health technology; and
- \$2 billion for affiliated grants and loans administered by the office of the National Coordinator for Health Information Technology.

provides all members of the primary care team with timely access to patient information and aids in the overall coordination of care. The range of health information technologies includes electronic medical records (EMRs), clinical decision support tools, computerized physician order entry systems, online appointment scheduling and secure messaging of test results. The implementation of these technologies requires substantial investment of both capital and personnel. Consequently, the development of financial models that encourage adoption and the creation of best practices in implementation, use and maintenance of the systems is required.

According to a recent survey, the percentage of office-based physicians using full or partial EMR systems is 29.2 percent, representing an increase of 22 percent since 2005 and an increase of 60 percent since 2001.⁴⁵

Site of Care Changes

In addition to changes in the models of primary care service delivery, several innovations have been proposed to change where care is delivered, making care more accessible and more convenient for patients.

- [Retail Clinics](#)

The retail clinic, usually located within a pharmacy or other large consumer goods retailer, offers a limited number of minor acute medical services on a walk-in basis. Care is generally provided by nurse practitioners or physician assistants. Retail clinics offer convenient access to basic primary care services, particularly for patients who are unable to schedule an immediate appointment with their primary care provider, although their ability to provide continuity of care and coordinate with patients' regular providers remains as yet undocumented.

- [Worksite Wellness Programs](#)

A growing number of employers, particularly large companies, are adding worksite wellness programs to their employees' traditional health benefit packages. Pitney Bowes, considered a leader in workplace wellness, uses data-driven interventions for its employee population to limit health care expenditure growth and reduce the health risks for its employees.⁴⁶ Many employer programs also include an on-site clinic that can provide both preventive and acute care in a place and at a time that is convenient for and easily accessible by employees. As with retail clinics, the convenience provided by worksite programs must be carefully balanced with care continuity and coordination.

- [Home Visits](#)

In a return to past medical practice, several programs across the country are shifting the site of care away from the office setting and back into the home. Primary care

services are increasingly provided in the home to elderly patients who face significant obstacles in traveling to office appointments. Care may be provided by either physicians or nurse practitioners.⁴⁷ Urban Medical Group has been a pioneer in this implementing approach in Boston.

- [Pre-visit Preparation Packets](#)

While not shifting the site of care, the use of pre-visit preparation packets can more efficiently utilize patients' time once they arrive at physicians' offices. These packets contain basic information about a patient's upcoming appointment, ensuring that patients are better prepared for and educated about their appointment. Having patients familiarize themselves with the packet materials ahead of time allows for better use of limited clinical time during the appointment.⁴⁸

Workforce Enhancements

As identified earlier, shortages in the primary care workforce contribute to the crisis in primary care. In particular, the limited supply of primary care physicians and the severe shortages predicted in the years ahead are major issues requiring a rethinking of the way in which primary care is

provided. Key to addressing the workforce challenge is redefining primary care as a team activity and refocusing the roles of all types of primary care

“ Sometimes I feel like more of a social worker. ”
-Primary Care Physician

providers, ensuring that the appropriate practitioner is matched to the work. For physicians, this will likely mean a shift in tasks, away from completion of paperwork and blood pressure screenings toward higher value clinical encounters.

- [Primary Care Teams](#)

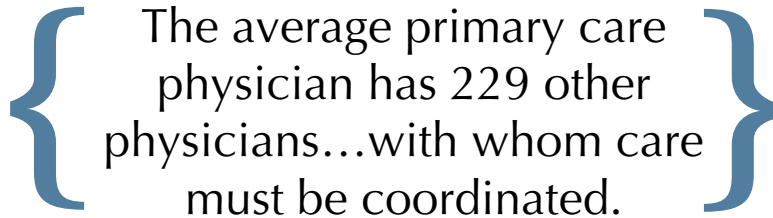
The most frequently mentioned workforce change identified in the literature and among experts was the development of primary care teams. Such teams are typically led by physicians and consist of nurse practitioners, physician assistants, registered nurses, medical assistants and receptionists, but may also include social workers, nutritionists and pharmacists. While these professionals currently practice together, their interactions are not coordinated and their roles are not appropriately delineated to provide the desired level of seamless and efficient service delivery.

A recent study of primary care teams found many benefits to an approach in which these roles were coordinated, including enhanced clinical and financial performance and reduced clinician workload.⁴⁹ A more detailed discussion of changes needed in the education of health professionals in order to prepare students for team-based care can be found later in this report.

- [Primary Care Coordinators](#)

The average primary care physician must coordinate patient care with 229 other physicians working in 117 practices.⁵⁰ Primary care coordinators are one tool that can assist physicians with this huge demand for care coordination. As their title implies, the main role of a primary care coordinator is to ensure that patient care is coordinated, both within the local

practice and throughout the broader health care system. This team member is typically a registered nurse or a social worker assigned to a select group of patients with complex

The average primary care physician has 229 other physicians...with whom care must be coordinated.

care requirements, particularly those with multiple chronic conditions that require the coordination of both primary care and specialist providers. While primary care coordinators are most often only responsible for a select portion of the patient population, they could also be used to coordinate care for all patients in a practice.

- [Advanced Practice Nurses](#)

Advanced practice nurses, sometimes referred to as “Dr. Nurses,” are an emerging group of nursing professionals trained and qualified to practice independently. These nurses are specifically trained to provide comprehensive care in the primary care setting. This new provider role has been identified by some experts as a potential solution to the shortage of primary care physicians by increasing the number of providers offering care and developing professionals who are committed to and focused on primary care practice. Significant work has been done in this field at Columbia University’s School of Nursing and other programs have opened nationwide.

Reimbursement Changes

The primary care reimbursement system is considered by nearly all experts to be deeply flawed, fundamentally undervaluing primary care and rewarding, or perhaps even forcing, physicians to provide more services without regard for the benefits of those encounters. Consequently, experts noted that the key in developing new reimbursement strategies is not simply to pay more for primary care services, but to ensure that primary care services are paid for in a way that encourages and rewards high-value encounters.

- [Improved Pay-for-Performance](#)

The promise of primary care lies in improved health outcomes, yet financial incentives in the current system have been identified by experts as poorly aligned with quality goals. Improved pay-for-performance would reward providers for helping their patients achieve positive health outcomes, moving the system away from paying for episodic care. The reality of this new generation of pay-for-performance is complex; any system

would need to fairly and transparently adjust payment according to case mix in order to prevent cherry-picking of healthy patients, and reward physicians who succeed with those patients in greatest need.

- [Bundled Payments](#)

Also known as "episode-based payment," bundled payments would pay providers a single, fixed payment for all the services related to a treatment or health condition.⁵¹ Such payment could include multiple providers in multiple settings; these providers would assume financial risk

for the cost of services as well as costs associated with preventable complications.

Under this model, providers

would have an incentive to

reduce services that have no or minimal benefit since they would receive a fixed payment to cover a bundle of services. Additionally, as payments for treatments would span across providers, providers would be encouraged to coordinate patient care.

“ We have to start paying for the outcomes we want. ”

-Health Insurance Executive

- [Global Service Payment](#)

In this payment plan, physicians are paid a lump sum to manage a group of patients, as opposed to reimbursement for encounters on a patient-by-patient basis. Physicians and their practices could use this money to provide care for individuals, and/or to invest in improvements to their practice that enhance the care for all patients, such as the use of electronic medical records or the hiring of additional staff members. Global service payments are considered a key enabler of the patient-centered medical home approach.

- [Accountable Care Organizations](#)

While many payment reform efforts have focused on the accountability of individual providers, a new model seeks to hold a wider range of providers accountable. As the name suggests, accountable care organizations (ACO) are collaborations within which a hospital, primary care physicians, specialists and other providers accept shared responsibility for the cost and quality of the care provided to a group of patients. While the specifics of ACOs differ, payment under this model would still be fee-for-service, but the organization as a whole would share both the cost savings gained from improved quality and the penalties incurred for reductions in quality that translate to excess cost.

- [Reimbursement for Phone and email Encounters](#)

According to our experts, basic reimbursement for providers' time spent on phone and email encounters with patients would be a major improvement to reimbursement policy. Many clinicians already provide care to patients this way without compensation, believing that they can improve care and enhance patient experiences.

Offering reimbursement for phone and email activities is not only a matter of fairness, but would serve to support patient access and improve care continuity through commonly used communication mechanisms that can dramatically increase the efficiency of patient care.

Health Profession Education Changes

Reforms to medical education have the potential to address multiple challenges facing primary care. First, improved training approaches can attract more students to primary care and thereby increase the number of medical students and residents going into primary care, alleviating the physician supply challenges. Second, and equally important, a redesigned training curriculum can ensure that new primary care practitioners are equipped to practice in the emerging models of primary care.

Given that the physician training process is multi-staged, innovations at the undergraduate medical student level and at the graduate medical education, or resident, level will be addressed separately.

- Medical School: Increasing the Numbers

Some experts argue that in order to increase the number of primary care physicians we need to start from the very beginning – with medical school admission policies. Proposed changes to admission policies include moving away from a focus on MCAT scores toward a “whole person approach.” A recent Josiah Macy, Jr. Foundation meeting to discuss strengthening the primary care workforce recommended similar changes in order to “attract a larger and more diverse mix of students who are likely to choose primary care and to care for patients in inner cities, small towns and rural areas.”⁵² These types of reforms to admission policies would support the creation of a more diverse workforce that better maps to the changing demographics of the nation.

Another basic approach to encourage medical students to enter primary care is tuition assistance and loan forgiveness for students who pursue the field, particularly in underserved communities. According to the Association of American Medical Colleges, the average medical student in the Class of 2007 graduated with \$139,517 in educational debt, and many consider the compensation currently offered in primary care insufficient to meet their debt obligations and provide their expected standard of living.⁵³ Financial incentives may provide the extra push to direct students into primary care who are otherwise reluctant to do so due to the low income expectations.

{ ...the average medical student in the Class of 2007 graduated with \$139,517 in educational debt... }

Examples of such loan forgiveness programs include the National Health Service Corps, a program that provides loan repayment to health professionals in exchange for service in underserved areas. Many believe that increasing the number of awards in this program would increase the number of students who enter primary care. States have developed similar programs. Massachusetts, in its most recent set of health care reforms, has made debt forgiveness for primary care physicians a key priority in its efforts to improve access to primary care services.

Finally, experts have identified the need to create primary care role models for students and foster primary care champions within medical school leadership. They note that it is vital that students are exposed to primary care professionals who represent the highest ideals and expertise in the field. Likewise, it is important that medical schools have primary care champions to ensure that the needs and interests of primary care are taken seriously and the field has a seat at the table for strategic and financial decision-making. Medical school culture has historically undervalued primary care compared to other specialties and leaders must work to change this culture.

- [Medical School: Redesigning the Curriculum](#)

In addition to simply increasing the number of medical students entering primary care residencies, experts have noted that there is a need to also redesign both medical school curricula and clerkship programs in order to better prepare students for practice. Some experts have noted that primary care clerkships are often provided by physicians who themselves are unhappy with the current state of primary care. Far from trying to “sell” the field to students, their frustrations may push away prospective primary care practitioners.

Given the aging population, many have called for an increased focus on chronic illness care and geriatrics, including medication management and palliative care, to ensure that students leave medical school with essential competencies in those fields. Likewise, as new care delivery models are developed, students must be prepared to practice care within these new systems. Teaching medical students to work as part of a team could also greatly improve students’ ability to practice primary care effectively; undergraduate medical student clerkships should include side-by-side training with other health professionals, including nurse practitioners, physician assistants and nurses (a discussion of collaborative or interprofessional education is featured in the next section of the report).

Additional improvements to medical schools’ primary care clerkships may also help to increase the number of students entering primary care residency programs. Proposed clerkship improvements include lengthening the clerkship from six weeks to eight weeks and placing students with practices that have adopted new primary care models. Another approach involves assigning medical students to a panel of patients to

follow through the health care system. Thus, rather than providing only primary care for the entire period, students experience the interplay between inpatient and outpatient care and see the importance of care coordination and teamwork.

Some programs, most notably at new osteopathic medical schools, have begun to shift the undergraduate medical education of primary care physicians out of the classroom and hospital settings and into the community (e.g. community health centers), exposing students to the real-world practice of community-based primary care. Experts have frequently mentioned the importance of students interacting directly with real patients as early as possible. Early exposure to patient care in the primary care setting has the potential to both increase student interest in the field and to better prepare students for primary care careers.

- [Graduate Medical Education: Increasing the Numbers](#)

As with medical school, there is potential to improve graduate medical education starting at the very beginning: during the match process. Some experts have argued that the residency match program should be reformed and assignments should be redistributed to better meet the needs of the overall American population. Today, most hospitals base decisions about the specialty residency programs they will host and the number of residents they will train on the specialty needs of hospitalized patients.⁵⁴ Experts therefore argue that the graduate medical education system should be reformed so that residency programs meet the needs of the entire population. These reforms could include a redistribution of residency assignments based on population needs and an increase in the number of outpatient residency locations.

- [Graduate Medical Education: Redesigning Residency Programs](#)

In parallel with medical schools, residency programs must shift the focus of training for primary care physicians to support new delivery models. Data show that many medical students choose to specialize despite selecting a residency program suitable for the practice of primary care. The trend is especially notable in internal medicine residency programs. Consequently, experts have identified a need to alter the residency experience in order to encourage residents to practice in general internal medicine and other general primary care fields. As with medical schools, there is a need to improve the overall quality of the primary care residency experience to show the rewarding and stimulating aspects of the generalist fields. This could include the recruitment of practices that have implemented new models of care delivery, such as the patient centered medical home.

Programs, particularly internal medicine programs, should be designed to help residents improve care coordination, especially for older patients or those with chronic conditions. For example, programs could work with residents to expose them to the process of transferring a patient from a hospital to a nursing home and exploring the

role of the general internist during that process. Experts have also called for an increase in the coordination of training program sites, including community health centers, health professions education programs and Area Health Education Centers, to improve the clinical experience of all health professionals.⁵⁵

Primary Care Innovation in Action: Collaborative Education

In the course of NEHI's research to identify the drivers of and solutions to the crisis in primary care, the creation of primary care teams emerged as one of the most promising innovations. Primary care teams can provide enhanced quality of care at lower costs compared to physician-only practices, reducing the burden on primary care physicians. Primary care teams are also an essential part of system redesign efforts, including the use of innovations such as the Patient-Centered Medical Home. Despite the promise of primary care teams, it is evident that the health professions education system continues to emphasize the role of the physician, rather than train students to practice medicine as part of a team.

Recognizing this disconnect, NEHI has closely examined collaborative education (also referred to as interprofessional education) in primary care. NEHI conducted extensive background research on the topic and held a first-of-its-kind summit of paired medical and nursing school deans, sponsored by the Robert Wood Johnson Foundation, on October 27, 2009 in Cambridge, Massachusetts. Participating programs included Columbia University, Saint Louis University, the University of Colorado, the University of Connecticut, the University of Massachusetts and the University of Pittsburgh. The expert audience of over 50 attendees included representatives from professional and accreditation associations, grant making organizations, health profession educators, and provider organizations.

The summit session focused on building the case for collaborative education, identifying and discussing barriers to establish such programs between nursing and medical schools, and developing consensus principles to overcome the barriers. The findings from the research and roundtable discussion are detailed below.

Benefits of Collaborative Education

There are many benefits to implementing collaborative education in the training of primary care providers. Training future nurses and physicians together using a curriculum that emphasizes team-based care helps students to develop important skills and attributes such as communication and listening skills, respect and appreciation for the function and strengths of all health professionals, professional relationship management, and leadership and conflict resolution skills.

“ This is not a simple matter. This is a revolution... ”
-Medical School Dean

Tactical Approaches to Promote Collaborative Education

A number of tactical approaches can help institutions to implement collaborative education. Some schools have begun to redesign their curricula and coursework, including enrolling students across programs into the same basic science classes, and creating interprofessional coursework, case-based curricula and areas of concentration in

which multiple disciplines can learn together. Other schools have organized school-wide collaborative education programs and activities, including shared orientations, student organizations and competitions, as well as interprofessional education centers and community outreach efforts.

Another new approach is to view collaborative education as a driver of quality improvement. Some programs have begun to implement team-based educational initiatives to meet quality improvement requirements as part of the accreditation process. Finally, some schools have utilized innovative, technology-driven approaches such as the use of state-of-the-art simulation labs and “e-Cases,” a web-based program that allows professionals to compare uni-disciplinary patient care plans with multidisciplinary approaches.

Barriers to Implementing Collaborative Education

Despite the benefits of collaborative education and the success of some institutions in promoting it, significant barriers exist to the wider implementation of such programs.

First, longstanding cultural norms in medical education – emphasizing a hierarchical structure led by physicians – have fostered biases, competition and even distrust among students. Second, logistical challenges are created by faculties that are housed separately – sometimes on different campuses – with different academic calendars. Third, limited funding for collaborative education makes it nearly impossible for institutions to make a long-term commitment to such initiatives. Fourth, jam-packed curricula and requirements for students to leave programs with a set of essential skills make the addition of any new material – including cross-educational material – very difficult. Finally, clinical experiences, including both undergraduate and post-graduate activities, can undo prior collaborative training, particularly if students work with practicing clinicians who are not working in highly functioning teams, or worse, who are dissatisfied with their work in general.

Consensus Principles

Through NEHI’s expert interviews and the Deans Summit, several important principles for the successful adoption of collaborative education programs have been identified:

- **[Institutional Leadership Must Pave the Way](#)**

The success of collaborative education programs depends in large part on the buy-in of institutional leadership; it is critical to garner the support of university presidents, academic health center executives, school chancellors and deans for several reasons. First, strong leadership support for these programs sends a clear message that collaborative education is a priority at the institution. Second, institutional leaders have the decision-making power necessary to move collaborative education from simply an idea to real changes in how future health professionals are trained; these

leaders can address and remove institutional and administrative barriers, such as different academic calendars. Third, strong leadership can encourage faculty members to become engaged in collaborative education work through incentives such as promotion, tenure and other forms of faculty recognition. Finally, institutional leaders have the power to affect funding-related decisions that ultimately determine whether collaborative education initiatives are sustainable.

- [Interdisciplinary Centers Foster Teams](#)

Interdisciplinary faculty committees can serve as an important first step in the development of collaborative education programs. These committees serve as planning bodies for collaborative education-related projects and, importantly, foster interdisciplinary faculty relationships. The establishment of formal interdisciplinary education centers to house and coordinate collaborative education allows for more broad-based and robust collaborative education activities. Center staff may include “traditional” adjunct faculty from each of the relevant schools, or may be comprised of faculty that focus solely on collaborative education. Often, the leadership of these centers do not report to one individual dean, but report to a panel of deans or to an overarching executive from the health sciences. This reporting structure sends a clear message throughout the institution about the importance of collaborative education.

- [Professional Societies Must Do Their Part](#)

Accreditation bodies and professional societies can play a significant role in the expansion of collaborative education. These entities have the power to shape the behavior of medical and nursing school programs, pushing curricula to include collaborative education or requiring such programs as part of the accreditation process. Similarly, these organizations are in the position to outline essential competencies for clinicians that include team-based skills.

- [Admissions Policies Should Be Reformed](#)

Current health professions admissions policies, particularly the use of the Medical College Admission Test (MCAT) for admission to medical schools, stress scientific knowledge to the detriment of social and interprofessional skills and experiences. As such, the MCAT may be generating a pipeline of future physicians with strong content knowledge, but failing to identify students with important characteristics for team-based care, such as communication and interpersonal skills. Revisions to the examinations and admissions processes, including the retraining of admissions committees, may support the selection of students better suited to lead and practice within teams.

- [Clinical Partnerships Should Showcase Teams](#)

Given the importance of clinical experience in shaping the way future providers deliver care and collaborate with others, there is both an opportunity and an imperative for institutions to develop clinical training partnerships that promote teams. Namely, institutions should recruit clinical sites that both utilize primary care teams

and support team-based practice. Fostering such partnerships will help to ameliorate the disconnect that often exists between students' pre-clinical education and their real-world clinical experiences.

- [Demonstration Projects and Evaluation Can Build the Case](#)

Despite expert consensus and extensive anecdotal reports of the connections between collaborative education, better team-based care and improved patient outcomes, there has been little scientific study to validate this supposition. Rigorous evaluations of how the training of medical and nursing school students impacts their abilities as clinical team members, and how this affects patient care, will be critical to making the case for expanded collaborative education.

Impact of Health Care Reform on Primary Care

This paper comes at time of great opportunity for the U.S. health care system, with health care reform at the forefront of public debate. Despite the complexity of health care reform, there is general consensus on the core objectives: expanding quality health insurance coverage for those who do not have it, ensuring that Americans who currently have insurance keep that coverage and curbing the rising costs of health care. As the foundation for all health care delivery, primary care plays an important role in all of these efforts.

While the full impact of the current health care reform movement remains unclear, it is important to explore how reform legislation could impact primary care – whether through increases in demand for primary care services, reforms to the health care finance system or enhancements to graduate medical education.⁵⁶

More Patients In A Strained System

Core to both the House and Senate health reform bills are extensive reforms to the health insurance system, including insurance market regulation changes, adoption of an individual mandate, creation of an insurance market exchange, a “public option” plan, and expansions of both the

Medicaid and the State Children’s Health Insurance Program (SCHIP) programs.

Regardless of the specific approach, both bills would increase the number of insured individuals and, therefore, the demand for health care

services: The Congressional Budget Office predicts that by 2019 about 30 million previously uninsured Americans would gain coverage under the reform proposals. Such an influx of previously uninsured, and likely underserved, individuals would undoubtedly increase the demand for primary care services nationwide.

“ If we do not fix our health care system, America may go the way of GM – paying more, getting less and going broke... ”

- *President Barack Obama*

This increase would create a double-edged sword, with increasing demand straining an already overloaded system. Innovative solutions to strengthen primary care will be required to counter this demand spike and ensure that the system is prepared to care for up to 36 million new patients over the next decade. In response to this increased demand, both the Senate and House bills include provisions to increase Medicare payments for primary care services in the form of five to ten percent payment bonuses. Other provisions would increase Medicaid payments to Medicare levels and increase federal payments to states to help pay the costs of increased Medicaid primary care reimbursements.

New Models For Payment

Reformed payment models are another major element of both health care reform bills. Proposals include the establishment of new bodies under the Centers for Medicare and

Medicaid Services (CMS) to test, evaluate and expand new provider payment models, including the patient-centered medical home and accountable care organizations. Similarly, provisions would grant the Secretary of Health and Human Services the authority to expand successful new payment models to Medicare.

Increasing The Provider Supply

Finally, additional provisions would strengthen the primary care workforce. The bills call for reforms in graduate medical education to increase the number of primary care providers. Specifically, this includes the redistribution of residency positions, the promotion of training in outpatient settings, and the establishment of a Workforce Advisory Committee to develop and implement a national workforce strategy.

Looking to the Future

The U.S. primary care system is, without doubt, in crisis. Caught between a growing demand for services and a shrinking pool of providers, primary care is struggling to produce the high-quality, low-cost outcomes that the primary care model promised to deliver at its inception 50 years ago.

The current push for major, national health reform presents an opportunity for proponents of primary care to advocate for reforms in the primary care system as a vital component of a quality, value-based U.S. health care system. The development and, importantly, the implementation of policy solutions to the primary care crisis will require the collaborative efforts of all stakeholders: providers, payers, employers, hospitals, educators and patients.

The preceding report has provided a framework for a future in which primary care is the foundation of a high-quality, affordable, patient-centric health care system. Now all stakeholders must come together to remove barriers, redesign the delivery of primary care and create a primary care system that achieves its original promise.

Appendix I: Selected Sources

- American Academy of Family Physicians. DOs could play key role in bolstering primary care workforce. AAFP News. Available online: <http://www.aafp.org/online/en/home/publications/news/news-now/professional-issues/20090519dos-prim-care.html>.
- American Academy of Physician Assistants. (2009). Physician assistants in primary care.
- American College of Physicians. (2006). The impending collapse of primary care medicine and its implications for the state of the nation's health care: a public policy report of the American College of Physicians.
- American College of Physicians. (2008). How is a shortage of primary care physicians affecting the quality and cost of medical care?
- American College of Physicians. (2009). Nurse practitioners in primary care.
- American College of Physicians. (2009) Solutions to the challenges facing primary care medicine.
- Association of American Medical Colleges. (2008). The complexities of physician supply and demand: Projections through 2025.
- Association of American Medical Colleges. (2008). Center for workforce studies: Physician specialty data.
- American Osteopathic Association (2009). Osteopathic medical professional report.
- Best, R. G., Hysong, S. J., Pugh, J. A., Ghosh, S., & Moore, F. I. (2006). Task overlap among primary care team members: An opportunity for system redesign? *Journal of Healthcare Management / American College of Healthcare Executives*, 51(5), 295-306.
- Bodenheimer, T., Grumbach, K., and Berenson, R. A. (2009). A lifeline for primary care. *The New England Journal of Medicine*, 360(26): 2693-696.
- Bodenheimer, T. (2003). Primary care in the united states. innovations in primary care in the united states. *BMJ (Clinical Research Ed.)*, 326(7393), 796-799.
- Bodenheimer, T. (2006). Primary care--will it survive? *The New England Journal of Medicine*, 355(9), 861-864.
- Bodenheimer, Thomas. (2007). Building teams in primary care: Lessons learned. California Healthcare Foundation.
- Bodenheimer, T. (2007). Coordinating care: A major (unreimbursed) task of primary care. *Annals of Internal Medicine*, 147(10), 730-731.
- Bodenheimer, T., Berenson, R. A., & Rudolf, P. (2007). The primary care-specialty income gap: Why it matters. *Annals of Internal Medicine*, 146(4), 301-306.
- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *The Journal of the American Medical Association*, 288(14), 1775-1779.
- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness: The chronic care model, part 2. *The Journal of the American Medical Association*, 288(15), 1909-1914.

- Coleman, K., Austin, B.T., Brach, C, and Wagner, E.H. (2009). Evidence on the chronic care model in the new millennium. *Health Affairs*, 28(1): 75-85.
- Coleman, K., Mattke, S., Perrault, P.J., and Wagner, E.H. (2009). Untangling practice redesign from disease management: How do we best care for the chronically ill? *Annual Review of Public Health* 30: 385-4008.
- Colwill, J. M., Cultice, J. M., & Kruse, R. L. (2008). Will generalist physician supply meet demands of an increasing and aging population? *Health Affairs (Project Hope)*, 27(3), w232-41.
- Cunningham, P., & May, J. (2006). Medicaid patients increasingly concentrated among physicians. Tracking Report / Center for Studying Health System Change, 16,1-5.
- Cunningham, P. J., & Felland, L. E. (2008). Falling behind: Americans' access to medical care deteriorates, 2003-2007. Tracking Report 19, 1-5.
- Dorsey, E. R., Jarjoura, D., & Rutecki, G. W. (2005). The influence of controllable lifestyle and sex on the specialty choices of graduating U.S. medical students, 1996-2003. *Academic Medicine: Journal of the Association of American Medical Colleges*, 80(9), 791-796.
- Dummit, L. A. (2008). Primary care physician supply, physician compensation, and medicare fees: What is the connection? Issue Brief (George Washington University.National Health Policy Forum), (827), 1-13.
- Ebell, M. H. (2008). Future salary and US residency fill rate revisited. *The Journal of the American Medical Association*, 300(10), 1131-1132.
- Farber, J., Siu, A., & Bloom, P. (2007). How much time do physicians spend providing care outside of office visits? *Annals of Internal Medicine*, 147(10), 693-698.
- Garibaldi, R. A., Popkave, C., & Bylsma, W. (2005). Career plans for trainees in internal medicine residency programs. *Academic Medicine : Journal of the Association of American Medical Colleges*, 80(5), 507-512.
- Goodman, D. C., & Fisher, E. S. (2008). Physician workforce crisis? Wrong diagnosis, wrong prescription. *The New England Journal of Medicine*, 358(16), 1658-1661.
- Goroll, A. H., Berenson, R. A., Schoenbaum, S. C., & Gardner, L. B. (2007). Fundamental reform of payment for adult primary care: Comprehensive payment for comprehensive care. *Journal of General Internal Medicine: Official Journal of the Society for Research and Education in Primary Care Internal Medicine*, 22(3), 410-415.
- Government Accountability Office (GAO). (2008). Primary care professionals: Recent supply trends, projections, and valuation of services," GAO-08-472T, February 12, 2008. Available online: <http://www.gao.gov/new.items/d08472t.pdf>.
- Grumbach, K., & Bodenheimer, T. (2002). A primary care home for Americans: Putting the house in order. *The Journal of the American Medical Association*, 288(7), 889-893.
- Grumbach, K., & Bodenheimer, T. (2004). Can health care teams improve primary care practice? *The Journal of the American Medical Association*, 291(10), 1246-1251.
- Grumbach, K. Bodenheimer, T. and Grundy, P. (2009). The outcomes of implementing patient-centered medical home interventions: A review of the evidence on quality, access and costs from recent prospective evaluation studies. Patient-Centered Primary Care Collaborative.

- Hauer, K. E., Durning, S. J., Kernan, W. N., Fagan, M. J., Mintz, M., O'Sullivan, P. S., et al. (2008). Factors associated with medical students' career choices regarding internal medicine. *The Journal of the American Medical Association*, 300(10), 1154-1164.
- Iglehart, J. K. (2008). Medicare, graduate medical education, and new policy directions. *The New England Journal of Medicine*, 359(6), 643-650.
- Institute of Medicine. (2008). *Retooling for an aging America: Building the health care workforce*. Washington, DC: The National Academies Press.
- Kirsh, S., Watts, S., Pascuzzi, K., O'Day, M. E., Davidson, D., Strauss, G., et al. (2007). Shared medical appointments based on the chronic care model: A quality improvement project to address the challenges of patients with diabetes with high cardiovascular risk. *Quality & Safety in Health Care*, 16(5), 349-353.
- Laing, B. Y., Bodenheimer, T., Phillips, R. L., Jr, Bazemore, A., & Bazemore, A. (2008). Primary care's eroding earnings: Is congress concerned? *The Journal of Family Practice*, 57(9), 578-583.
- Margolis, P. and Halfon, N. (2009). Innovation networks: A strategy to transform primary care. *Journal of the American Medical Association*, 302(13), 1461-2.
- Massachusetts Medical Society. (2008). *MMS physician workforce study*. Waltham, MA.
- Massachusetts Medical Society. (2009). *MMS physician workforce study*. Waltham, MA.
- Mechanic, D. (2003). Physician discontent: Challenges and opportunities. *The Journal of the American Medical Association*, 290(7), 941-946.
- Mehrotra, A., Keehl-Markowitz, L., & Ayanian, J. Z. (2008). Implementing open-access scheduling of visits in primary care practices: A cautionary tale. *Annals of Internal Medicine*, 148(12), 915-922.
- Mehrotra, A., Wang, M. C., Lave, J. R., Adams, J. L., & McGlynn, E. A. (2008). Retail clinics, primary care physicians, and emergency departments: A comparison of patients' visits. *Health Affairs (Project Hope)*, 27(5), 1272-1282.
- Moore, Gordon T. (2006). Information technology and primary care. Available online: <http://www.rwjf.org/files/research/gtmooreinfotech092006.pdf>
- Moore, G., & Showstack, J. (2003). Primary care medicine in crisis: Toward reconstruction and renewal. *Annals of Internal Medicine*, 138(3), 244-247.
- Munding, M. O. (2002). Twenty-first-century primary care: New partnerships between nurses and doctors. *Academic Medicine : Journal of the Association of American Medical Colleges*, 77(8), 776-780.
- National Association of Community Health Centers, The Robert Graham Center and Capital Link. (2007). Access denied: A look at America's medically disenfranchised. Available online: http://www.nachc.com/client/documents/research/Access_Denied42407.pdf
- National Association of Community Health Centers, The Robert Graham Center and Capital Link. (2007). Access granted: The primary care payoff. Available online: http://www.nachc.com/client/documents/research/Access_Granted_FULL_REPORT.pdf
- Nutting, P.A., Miller, W.L., Crabtree, B.F. Jaen, C.R., Stewart, E.E. and Stange, K.C. (2009). Initial lessons from the first national demonstration project on practice transformation to a patient-centered medical home. *Annals of Family Medicine*, 7(3), 254-60.

- Okie, S. (2008). Home delivery--bringing primary care to the housebound elderly. *The New England Journal of Medicine*, 359(23), 2409-2412.
- Phillips, R. L., Jr, & Starfield, B. (2004). Why does a U.S. primary care physician workforce crisis matter? *American Family Physician*, 70(3), 440, 442, 445-6.
- Physician's Foundation. (2008). *The physician's perspective: medical care in 2008*.
- Poon, E. G., Gandhi, T. K., Sequist, T. D., Murff, H. J., Karson, A. S., & Bates, D. W. (2004). I wish I had seen this test result earlier! Dissatisfaction with test result management systems in primary care. *Archives of Internal Medicine*, 164(20), 2223-2228.
- Reuben, D. B. (2007). Saving primary care. *The American Journal of Medicine*, 120(1), 99-102.
- Rittenhouse, D.R. and Shortell, S.M. (2009). The patient-centered medical home: Will it stand the test of health reform? *The Journal of the American Medical Association* 301(19): 2038-040.
- Rittenhouse, D.R., Shortell, S.M., & Fisher, E. S. (2009). Primary care and accountable care- Two essential elements of delivery-system Reform. *The New England Journal of Medicine*. Oct 2009 [Epub ahead of print].
- Roblin, D. W., Vogt, T. M., & Fireman, B. (2003). Primary health care teams. Opportunities and challenges in evaluation of service delivery innovations. *The Journal of Ambulatory Care Management*, 26(1), 22-35; discussion 36-8.
- Rosenthal, M. B. (2008). Beyond pay for performance--emerging models of provider-payment reform. *The New England Journal of Medicine*, 359(12), 1197-1200.
- Rothman, A. A., & Wagner, E. H. (2003). Chronic illness management: What is the role of primary care? *Annals of Internal Medicine*, 138(3), 256-261.
- Safran, D.G. (2003). Defining the future of primary care: What can we learn from patients? *Annals of Internal Medicine*, 138, 248-255.
- Saxe, J. M., Janson, S. L., Dennehy, P. M., Stringari-Murray, S., Hirsch, J. E., & Waters, C. M. (2007). Meeting a primary care challenge in the united states: Chronic illness care. *Contemporary Nurse : A Journal for the Australian Nursing Profession*, 26(1), 94-103.
- Schmittiel, J. A., Shortell, S. M., Rundall, T. G., Bodenheimer, T., & Selby, J. V. (2006). Effect of primary health care orientation on chronic care management. *Annals of Family Medicine*, 4(2), 117-123.
- Schroeder, S. A. (2002). Primary care at a crossroads. *Academic Medicine : Journal of the Association of American Medical Colleges*, 77(8), 767-773.
- Sepulveda, M. J., Bodenheimer, T., & Grundy, P. (2008). Primary care: Can it solve employers' health care dilemma? *Health Affairs (Project Hope)*, 27(1), 151-158.
- Showstack, J., Lurie, N., Larson, E. B., Rothman, A. A., & Hassmiller, S. (2003). Primary care: The next renaissance. *Annals of Internal Medicine*, 138(3), 268-272.
- Showstack, J., Rothman, A. A., & Hassmiller, S. (2003). Primary care at a crossroads. *Annals of Internal Medicine*, 138(3), 242-243.
- Sommers, L. S., Hacker, T. W., Schneider, D. M., Pugno, P. A., & Garrett, J. B. (2001). A descriptive study of managed-care hassles in 26 practices. *The Western Journal of Medicine*, 174(3), 175-179.

- St Peter, R. F., Reed, M. C., Kemper, P., & Blumenthal, D. (1999). Changes in the scope of care provided by primary care physicians. *The New England Journal of Medicine*, 341(26), 1980-1985.
- Starfield, B., Shi, L., & Macinko, J. (2005). Contribution of primary care to health systems and health. *The Milbank Quarterly*, 83(3), 457-502.
- U.S. Department of Health and Services. (2007). *Health, United States, 2007*.
- U.S. Department of Health and Human Services. Health Resources and Service Administration Bureau of Health Professions. *The Physician Workforce: Projections and Research into Current Issues Affecting Supply and Demand*, 2008.
- Whitcomb, M. E. (2007). Preparing the personal physician for practice (P(4)): Meeting the needs of patients: Redesign of residency training in family medicine. *Journal of the American Board of Family Medicine*, 20(4), 356-64.
- Zerehi, M. Renee. (2008). How is a shortage of primary care physicians affecting the quality and cost of medical care? A comprehensive evidence review. American College of Physicians.

Appendix II: Experts Interviewed

Wayne Altman, MD, *Associate Clinical Professor, Department of Public Health and Family Medicine, Tufts University School of Medicine*

Carol Aschenbrenner, MD, *Executive Vice President, Association of American Medical Colleges*

Michael Barr, MD, *Vice President, Practice Advocacy and Improvement, American College of Physicians*

Michael J. Barry, MD, *Chief of the General Medicine Unit, Director of Primary Care Operations Improvement and Medical director of the John D. Stoeckle Center for Primary Care Innovation, Massachusetts General Hospital*

Geraldine Bednash, PhD, RN, *Chief Executive Officer and Executive Director, American Association of Colleges of Nursing*

Amy Blue, PhD, *Assistant Provost for Education, Medical University of South Carolina*

Frank Cerra, MD, *Dean, University of Minnesota School of Medicine*

Michael F. Collins, MD, FACP, *Senior Vice President for Health Sciences, University of Massachusetts; Chancellor, University of Massachusetts Medical School*

Paul D. Cleary, PhD, *Dean and Anna M.R. Lauder Professor of Public Health, Yale University School of Public Health*

Linda Cronenwett, PhD, RN, FAAN, *Professor, University of North Carolina School of Nursing*

Robert D'Alessandri, MD, *President and Dean, Commonwealth Medical College*

Richard A. Davidson, MD, *Director, Programs for Interdisciplinary Education, University of Florida College of Medicine*

Kathy Dracup, RN, DNS, FAAN, *Dean, University of California at San Francisco School of Nursing*

Victor Dzau, MD, *Chancellor of Health Affairs, President and CEO, Duke University Health System*

Harvey V. Fineberg, MD, PhD, *President, Institute of Medicine*

David Fleiszer, MD, *Co-Leader, McGill Educational Initiative on Interprofessional Collaboration, McGill University*

Jeffrey Flier, MD, *Dean, Harvard Medical School*

Kevin Grumbach, MD, *Professor and Chair, Department of Family and Community Medicine, University of California at San Francisco School of Medicine*

Doug Kelling, MD, *Staff Physician, Carolinas Medical Center NorthEast*

Alan Houry, MD, PhD, *Chief Medical Officer, Take Care Health Systems*

Christopher Langston, PhD, *Program Director, John A. Hartford Foundation*

Joseph B. Martin, MD, PhD, *Lefler Professor of Neurobiology and Dean Emeritus, Harvard Medical School*

Judy Martin-Holland, PhD, *Associate Dean, University of California at San Francisco School of Nursing*

Afaf I. Meleis, PhD, DrPS (hon), FAAN, *Margaret Bond Simon Dean of Nursing*, University of Pennsylvania School of Nursing

Gordon Moore, MD, MPH, *Professor, Department of Ambulatory Care and Prevention*, Harvard Medical School & Harvard Pilgrim Health Care

Mary O'Neil Mundinger, DrPH, RN, *Dean and Centennial Professor of Health Policy*, Columbia University School of Nursing

Louise Nasmith, MDCM, *Principal*, University of British Columbia College of Health Disciplines

Zeev Neuwirth, MD, *Vice President of Clinical Effectiveness and Innovation*, Atrius Health

Brent Pawlecki, MD, *Corporate Medical Director*, Pitney Bowes

Nancy Posel, PhD, *Assistant Director, Molson Project*, McGill University

Victoria Rich, PhD, *Assistant Dean of Clinical Practice*, University of Pennsylvania School of Nursing

Loren H. Roth, MD, *Associate Senior Vice Chancellor for Health Sciences*, University of Pittsburgh

John W. (Jack) Rowe, MD, *Professor of Health Policy and Management*, Columbia University Mailman School of Public Health

Stephen Shannon, DO, MPH, *President*, American Association of Colleges of Osteopathic Medicine (AACOM)

Joanne G. Schwartzberg, MD, *Director, Aging and Community Health*, American Medical Association

Marcia Starbecker, RN, *Chief, Geriatrics and Public Health Branch*, Health Resources and Services Administration

George Thibault, MD, *President*, Josiah Macy Jr. Foundation

Kenneth Veit, DO, *Dean and Vice President of Academic Affairs*, Philadelphia College of Osteopathic Medicine

Steven Wartman, MD, PhD, *President and CEO*, Association of Academic Health Centers

Steven Weinberger, MD, *Senior Vice President for Medical Education and Publishing*, American College of Physicians

Joan Weiss, PhD, RN, *Director, Division of Diversity and Interdisciplinary Education*, Health Resources and Services Administration

Douglas Wood, DO, PhD, *Dean*, A.T. Still University School of Osteopathic Medicine in Arizona

Charlotte Yeh, MD, FACEP, *Chief Medical Officer*, AARP Services, Inc.

Greg Young, MD, *President and CEO*, Pediatric Physicians Organization at Children's; *Vice President of Community Pediatrics*, Children's Hospital Boston

Notes and References

- ¹ American Academy of Family Physicians. (2008). Primary care. Available online: <http://www.aafp.org/online/en/home/policy/policies/p/primarycare.html>.
- ² National Center for Health Workforce Analysis. (2008). U.S. health workforce personnel factbook. Available online: <http://bhpr.hrsa.gov/healthworkforce/reports/factbook.htm>.
- ³ Alma-Ata. Declaration of Alma-Ata: International conference on primary health care. USSR; Sept 6-12, 1978. Available online: http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf.
- ⁴ Starfield, B., Shi, L., & Macinko, J. (2005). Contribution of primary care to health systems and health. *Milbank Quarterly*, 83(3), 457-502.
- ⁵ *Ibid.*
- ⁶ Baicker, K. & Chandra, A. (2004). Medicare spending, the physician workforce, and beneficiaries' quality of care. *Health Affairs*, Online exclusive posted April 7, 2004.
- ⁷ U.S. Census Bureau. Available online: <http://www.census.gov/>.
- ⁸ Paez, K., Zhao, L., & Hwang, W. (2009). Rising out-of-pocket spending for chronic conditions: a ten year-trend. *Health Affairs*, 28(1), 15-25.
- ⁹ DeVol, R. & Bedroussian, A. (2007). An unhealthy America: The economic burden of chronic disease. Milken Institute, October 2007.
- ¹⁰ Decker, SL, Schappert SM, & Sisk JE. (2009) Use of medical care for chronic conditions. *Health Affairs*, 28(1), 26-35.
- ¹¹ A Primary Care Health Professional Shortage Area is a population with a full-time equivalent primary care physician ratio of at least 3,500:1. Full description online at: <http://bhpr.hrsa.gov/shortage/primarycare.htm>
- ¹² Association of American Medical Colleges. (2008). The complexities of physician supply and demand: Projections through 2025.
- ¹³ American College of Physicians. (2008). How is a shortage of primary care physicians affecting the quality and cost of medical care?
- ¹⁴ Hauer, K. E., Durning, S. J., Kernan, W. N., Fagan, M. J., Mintz, M., O'Sullivan, P. S., et al. (2008). Factors associated with medical students' career choices regarding internal medicine. *The Journal of the American Medical Association*, 300(10), 1154-1164.
- ¹⁵ American College of Physicians. (2009). Residency match results demonstrate need to address national primary care workforce goals. March 19, 2009. Available online: http://www.acponline.org/pressroom/09_match.htm?hp
- ¹⁶ American Osteopathic Association (2009). Osteopathic medical professional report. Available online: http://www.osteopathic.org/index.cfm?PageID=aoa_ompreport
- ¹⁷ *Ibid.*
- ¹⁸ American Academy of Family Physicians. DOs could play key role in bolstering primary care workforce. AAFP News. Available online: <http://www.aafp.org/online/en/home/publications/news/news-now/professional-issues/20090519dos-prim-care.html>.
- ¹⁹ American College of Physicians. (2009). Nurse practitioners in primary care.
- ²⁰ Government Accountability Office (GAO). (2008). Primary care professionals: Recent supply trends, projections, and valuation of services, GAO-08-472T, February 12, 2008. Available online: <http://www.gao.gov/new.items/d08472t.pdf>.
- ²¹ American Academy of Physician Assistants. (2009). Physician assistants in primary care.
- ²² Government Accountability Office (GAO). (2008). Primary care professionals: Recent supply trends, projections, and valuation of services, GAO-08-472T, February 12, 2008. Available online: <http://www.gao.gov/new.items/d08472t.pdf>.
- ²³ American Academy of Physician Assistants. (2009). Physician assistants in primary care.
- ²⁴ United States Department of Labor, Bureau of Labor Statistics. Employment matrix 2006-16.
- ²⁵ Buerhaus PI, Auerbach DI, & Staiger DO. (2009). The recent surge in nurse employment: causes and implications. *Health Affairs*, 28(4), w657-68.
- ²⁶ Each service has three relative value units (RVU) – physician work, practice expenses, and professional liability insurance- that account for how that particular service compares to all other services in resources and skills needed. The RVUs are summed and multiplied by the conversion factor to determine the total Medicare fee for service.
- ²⁷ Dummit, L. A. (2008). Primary care physician supply, physician compensation, and medicare fees: What is the connection? Issue Brief (George Washington University.National Health Policy Forum), (827), 1-13.
- ²⁸ Physician's Foundation. (2008). The physician's perspective: medical care in 2008.
- ²⁹ Massachusetts Medical Society. (2009) MMS physician workforce study. Waltham, MA.
- ³⁰ National Ambulatory Medical Care Survey based on data from 2003-2004.
- ³¹ National Ambulatory Medical Care Survey based on data from 1997-2005.

-
- ³² Weinick, R., Billings, J. & Thorpe, J. (2003). Ambulatory care sensitive emergency department visits: a national perspective. Abstract AcademyHealth Meeting, 20(8).
- ³³ Yarnall KS, Pollak KI, Østbye T, Krause KM, & Michener JL. (2003). Primary care: is there enough time for prevention? American Journal of Public Health, 93(4), 635-41.
- ³⁴ Ostbye T, Yarnall KS, Krause KM, Pollak KI, Gradison M, & Michener JL.(2005). Is there time for management of patients with chronic diseases in primary care? Annals of Family Medicine, 3(3), 209-14.
- ³⁵ Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL Jr, et al. The seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure: the JNC 7 report. The Journal of the American Medical Association, 289(19), 2560-2571.
- ³⁶ Osterberg L, Blaschke T. (2005). Adherence to medication. New England Journal of Medicine, 353(5), 487-97.
- ³⁷ Joint principles of patient centered medical home. (2007). Available online: <http://www.pcpcc.net/node/14>.
- ³⁸ Patient-Centered Primary Care Collaborative. (2009). The outcomes of implementing patient-centered medical home interventions: A review of the evidence on quality, access and costs from recent prospective evaluation studies.
- ³⁹ MacColl Institute. Chronic care model: improving chronic illness care. Available online: http://www.improvingchroniccare.org/index.php?p=The_Chronic_Care_Model&s=2
- ⁴⁰ Coleman, K., Austin, BT, Brach, C, & Wagner, E.H. (2009). Evidence on the chronic care model in the new millennium. Health Affairs, 28(1), 75-85.
- ⁴¹ American Academy of Family Physicians. (2008). Shared medical appointments/group visits. Available online: <http://www.aafp.org/online/en/home/policy/policies/s/sharedmedapptsgrpvisits.html>
- ⁴² Wagner, EH, Grothaus, LC, Sandhu, Nirmala, Galvin, MS, McGregor, M, Artz, K et al. Chronic care clinics for diabetes in primary care: A system-wide randomized trial. Diabetes Care., 24(4), 695-700.
- ⁴³ Mehrotra, A., Keehl-Markowitz, L., & Ayanian, J. Z. (2008). Implementing open-access scheduling of visits in primary care practices: A cautionary tale. Annals of Internal Medicine, 148(12), 915-922.
- ⁴⁴ *Ibid.*
- ⁴⁵ Hing ES, Burt CW, & Woodwell DA. (2007). Electronic medical record use by office-based physicians and their practices: United States, 2006. Advance data from vital and health statistics; no 393. Hyattsville, Maryland: National Center for Health Statistics.
- ⁴⁶ Expert interview.
- ⁴⁷ Okie, S. (2008). Bringing primary care to the housebound elderly. New England Journal of Medicine, 359(23), 2409-2412.
- ⁴⁸ Edgman-Levitan S. (2005). Prescribing pre-visit materials in a primary care setting. Abstract AcademyHealth Meeting, 22(3768).
- ⁴⁹ Bodenheimer, T. (2007). Building teams in primary care: Lessons learned. California HealthCare Foundation.
- ⁵⁰ Pham HH, O'Malley AS, Bach PB, Saiontz-Martinez C, & Schrag D. (2009). Primary care physicians' links to other physicians through Medicare patients: the scope of care coordination. Annals of Internal Medicine, 150(4), 236-42.
- ⁵¹ RAND Corporation. Overview of bundled payment policy pptions. Available online: http://www.randcompare.org/options/mechanism/bundled_payment .
- ⁵² Josiah Macy Jr. Foundation. (2009). Developing a strong primary care workforce: A meeting funded by the Josiah Macy, Jr. Foundation, April 20, 2009, Washington, D.C. Available online: http://www.josiahmacyfoundation.org/documents/jmf_primarycare_summary.pdf.
- ⁵³ Association of American Medical Colleges. (2007). Medical school tuition and young physician indebtedness.
- ⁵⁴ Josiah Macy Jr. Foundation. (2009). Developing a strong primary care workforce: A meeting funded by the Josiah Macy, Jr. Foundation, April 20, 2009, Washington, D.C. Available online: http://www.josiahmacyfoundation.org/documents/jmf_primarycare_summary.pdf.
- ⁵⁵ *Ibid.*
- ⁵⁶ For addition information on health care reform provisions related to this topics and others, please see a recently analysis by the Commonwealth Fund available online: <http://www.commonwealthfund.org/Content/Publications/Fund-Reports/2009/Oct/Congressional-Health-Reform-Bills.aspx>.

Notes

NEHI Members

Academic Research & Providers

Boston University School of Medicine
Caritas Christi Health Care
Dana-Farber Cancer Institute
Harvard Medical School
Harvard Stem Cell Institute
Harvard Vanguard Medical Associates
Joslin Diabetes Center
Partners HealthCare System
Tufts Center for the Study of Drug
Development
Tufts University School of Medicine
University of Connecticut Health Center
University of Massachusetts Medical School
Worcester Polytechnic Institute

Associations & Quality Organizations

AdvaMed
Biotechnology Industry Organization
California Healthcare Institute
Greater Boston Chamber of Commerce
Massachusetts Biotechnology Council
Massachusetts Hospital Association
Massachusetts Medical Society
Masspro
Massachusetts Council of Community
Hospitals
Massachusetts Technology Collaborative
National Pharmaceutical Council
New England Council
PhRMA

Patient Organizations

American Cancer Society-New England
National Organization for Rare Disorders
National Health Council

Biotechnology

Alkermes
Amgen
Cubist Pharmaceuticals
EMD Serono
Genzyme Corporation
Millipore Corporation
Organogenesis
Vertex Pharmaceuticals

Health IT and Communications

SironaHealth
Verisk Health

Medical Device and Diagnostics

ABIOMED
BD (Becton, Dickinson and Company)
DePuy Mitek
Navigenics
Philips Healthcare
Thermo Fisher Scientific

Pharmaceutical

AstraZeneca
Baxter
Bayer HealthCare
GlaxoSmithKline
Merck & Co., Inc.
Novartis Vaccines & Diagnostics
Novo Nordisk
Pfizer
Wyeth

Wellness & Care Management

Care Management Technologies
Take Care Health Systems
Vermedx

Payers

Blue Cross Blue Shield of Massachusetts
Harvard Pilgrim Health Care
Tufts Health Plan
WellPoint, Inc.

Employers

EMC Corporation
Pitney Bowes

Professional Affiliates

Deloitte LLP
Ernst & Young LLP
FirstJensenGroup
Foley Hoag LLP
King & Spalding LLP
McDermott, Will & Emery LLP
McKinsey & Company
MPM Capital
Oxford Bioscience Partners
PAREXEL International
PricewaterhouseCoopers LLP
Randstad USA



New England Healthcare Institute

One Broadway, Twelfth Floor
Cambridge, MA 02142
t: 617.225.0857
f: 617.225.9025
www.nehi.net



44 East 64th Street
New York, NY 10065
t: 212.486.2424
f: 212.644.0765
www.josiahmacyfoundation.org