

**ADVISORY COMMITTEE ON TRAINING
IN PRIMARY CARE MEDICINE
AND DENTISTRY**

***COMING HOME:
THE PATIENT-CENTERED
MEDICAL-DENTAL HOME
IN PRIMARY CARE TRAINING***

**Seventh Annual Report to
the Secretary of the
U.S. Department of Health and Human Services
and to Congress**

December 2008

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The views expressed in this document are solely those of the Advisory Committee on Training in Primary Care Medicine and Dentistry and do not necessarily represent the views of the Health Resources and Services Administration nor the United States Government.

TABLE OF CONTENTS

Advisory Committee on Training in Primary Care Medicine and Dentistry	v
Executive Summary	vii
Coming Home: The Patient-Centered Medical-Dental Home In Primary Care Training	1
Introduction	1
Recommendations	2
Background Evidence: The Health Care Environment	4
Changing Health Profiles and the Growing Need for Chronic Illness Care	4
Uninsured Population.....	5
Health Care Costs for the Insured.....	5
Health Disparities	5
Health Care Expenditures and Health Outcomes	6
Importance of Primary Care to Population Health, Prevention, and Chronic Disease Care	6
Supply and Demand and the Critical Need for Primary Care.....	7
The Medical-Dental Home	8
Empiric Evidence of the Value of the Medical-Dental Home	11
Cost-Effectiveness of the Medical-Dental Home	12
Planned Pilot Studies of the Medical-Dental Home	12
Challenges to Implementing the Medical-Dental Home.....	13
Changes Needed in Medical and Dental Education	14
The Importance of Title VII, Section 747 to Primary Care Training Related to the Medical-Dental Home	16
The Importance of Title VII, Section 747 Programs	16
The Value of Title VII, Section 747 Programs.....	16
Summary	18
References	19

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

Section 748 of the Health Professions Education Partnerships Act of 1998 authorizes the establishment of an Advisory Committee on Training in Primary Care Medicine and Dentistry. The Act directs the Secretary to establish an advisory committee to be known as the Advisory Committee on Training in Primary Care Medicine and Dentistry. The Advisory Committee was constituted to:

- 1) Provide advice and recommendations to the Secretary concerning policy and program development and other matters of significance concerning the activities under Title VII, section 747.
- 2) Not later than 3 years after the date of enactment, and annually thereafter, prepare and submit to the Secretary, the Committee on Health, Education, Labor and Pensions of the Senate and the Committee on Energy and Commerce of the House of Representatives, a report describing the activities of the Advisory Committee, including findings and recommendations made by the Advisory Committee concerning the activities under section 747.

Congress created the Advisory Committee to obtain insight and objectives from primary health care providers, educators, and trainees who work on the front line. The members below include such health professionals as physicians and physician assistants, as well as general and pediatric dentists, from the disciplines of primary care medicine and dentistry.

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EXECUTIVE SUMMARY

The foundation of health care in the U.S. — primary care — is disappearing because trainees are shunning primary care specialties while practicing primary care physicians, in particular, are leaving the field. Primary care clinicians from many disciplines have rallied to support the patient-centered medical home and dental home (PCM-DH) as an exciting, innovative model of care designed to meet the burgeoning needs of Americans for disease prevention and chronic disease treatment. This team-based model of care promises to improve quality of patient care in a professionally satisfying primary care practice environment. The Advisory Committee on Training in Primary Care Medicine and Dentistry makes nine recommendations for the Title VII, section 747 program to support primary care training and to prepare training programs to educate clinicians to practice in the PCM-DH:

1. Restore Funding

- We request that Congress fund Title VII, section 747 at the \$215 million level requested previously in the 2006 Advisory Committee Report in order to support existing primary care programs and to fund, in part, the following initiatives to establish the educational environment for the PCM-DH.

2. Develop Curricula (undergraduate, graduate, and faculty)

- Title VII, section 747 should give priority to commissioning 30 expert educator teams to develop and evaluate new curricula on the skills, attitudes, and knowledge base needed to practice effectively in the PCM-DH.

3. Train Leaders (post-graduate fellows and faculty, dentists)

- Title VII, section 747 should give priority to developing 25 non-degree, clinician-educator training programs for 160 primary care post-graduate fellows/trainees and faculty annually to become leaders in training clinicians in the unique skills, attitudes, and knowledge needed to practice in the PCM-DH.

- Title VII, section 747 should give priority to creating 20 clinician-researcher training programs for 100 primary care postgraduate fellows/trainees and faculty annually to acquire the research skills necessary to conduct evaluations of the PCM-DH in regard to patient, clinician, and societal outcomes.

4. Pilot PCM-DH Educational Programs

- Title VII, section 747 should give priority to supporting and evaluating 50 two-year pilot projects of the PCM-DH in diverse clinician training programs followed by the implementation of the most promising projects in 100 additional training settings.

5. Focus on Vulnerable Populations and Health Disparities

- Title VII, section 747 should be charged with insuring that all curricula and training programs prepare clinicians to provide culturally competent, quality care for vulnerable populations within the PCM-DH.

6. Develop Infrastructure

- Congress should consider allocating additional resources to support Title VII, section 747 to become the key Federal resource for information about PCM-DH educational programs and support initiatives to establish a PCM-DH infrastructure in training programs.
- Congress should consider funding the basic infrastructure needed to implement the PCM-DH in training programs (medical, dental, and physician assistant).

7. Coordinate Continuing Medical and Dental Education

- Congress should expand the authority of Title VII, section 747 to serve as the Federal program charged with insuring that organizations meet expert-established standards for training in the PCM-DH in their continuing medical and dental

education programs as well as their maintenance of certification programs.

8. Obtain Funding and Expanded Authority for Programs Related to the PCM-DH

- To support the initiatives in recommendations 2, 3, and 4, Congress should allocate \$20 million in addition to the restored budget of \$215 million requested for Title VII, section 747 (recommendation 1);
- Congress should expand the authority of Title VII, section 747 to address new programs described under recommendations 6 and 7 and provide \$5 million for staff support for these programs.

9. Conduct Evaluation

- Congress should commission a study by a respected external organization, such as the Institute of Medicine, to examine critical topics related to the success of primary care including Federal support for the PCM-DH, training to practice in the PCM-DH, and incentives to increase interest in primary care.

COMING HOME: THE PATIENT-CENTERED MEDICAL-DENTAL HOME IN PRIMARY CARE TRAINING

INTRODUCTION

Rapidly changing dynamics in the U.S. health care environment drive the need for major restructuring of the health care system that highlights disease prevention and comprehensive, coordinated care for chronic diseases. Primary care clinicians who serve as the principal and first point of contact for health care must be the centerpiece of reforms to address the broad health care needs of the diverse U.S. population. However, the availability of primary care in the U.S. has been shrinking at an alarming rate over the past decade due to plummeting interest among newly trained physicians and an exodus of primary care physicians from their harried practices. Before this foundation of health care disappears entirely from the U.S., drastic action must be urgently undertaken. Some of these actions involve realignment of our antiquated, inequitable system that pays handsomely for procedures, tests, and specialty services but relatively meager sums for the demanding primary care role of coordinating acute and chronic disease care while delivering preventive care. In this document, we address another key aspect of revitalizing primary care by restructuring the primary care practice environment to increase the quality of patient care while restoring primary care clinicians' personal enjoyment in the practice of medicine. This new practice environment will augment the primary care physician's skills and knowledge with a multi-disciplinary team; information technology; patient self-care education; and structural innovations to ensure accessible, comprehensive care.

In this document, we present the justification for the Patient-Centered Medical and Dental Home (PCM-DH) to serve as this new primary care practice environment and define the key role that Title VII, section 747 must play in its development and implementation. It is critical that both Congress and the Secretary of Health and Human Services arrest the incessant efforts to eliminate Title VII, section 747. Poor understanding of the mission and accomplishments of this Federal program have led to a slashed budget that has devastated existing Title VII, section 747 efforts to train the leaders of primary care education. From 2002 to 2008, the funding for Title VII, section 747 dropped from \$93 million to \$48 million, despite the urgent efforts of a broad consortium

of primary care and other health care organizations to restore adequate funding for these programs. Ironically, these cuts occurred at a time when Congress and many expert groups called for a revitalization of primary care training and practice.

In 2004, the American Academy of Pediatrics (AAP), in association with the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), and the American Osteopathic Association (AOA), defined comprehensive guidelines for the Patient-Centered Medical Home (PCMH) as the central approach to improve health care in the U.S. (Patient Centered Primary Care Collaborative, 2007). In the same year, the American Academy of Pediatric Dentistry (AAPD) formally adopted a policy endorsing the Dental Home (DH) (AAPD, 2004). The Patient-Centered Medical-Dental Home (PCM-DH) represents an enhanced health care model. In this model, each patient has a personal physician or dentist who leads a team of clinical care providers and staff who take collective responsibility for delivering comprehensive, coordinated care that addresses all of a patient's health care needs.

The PCM-DH focuses on the patient instead of a single organ system. It requires a well-trained, large primary care workforce with expertise in providing broad-based, collaborative health care. This report describes the core components of the PCM-DH, focusing on the need for training programs funded by Title VII, section 747 to offer a foundation for this model of care. It is important to note that, in these recommendations, we focus on specific types of training under the purview of Title VII, section 747 so that, for instance, we do not address training of nurses, which is the responsibility of Title VIII. In this document, we first offer key recommendations for Title VII, section 747 training programs. Second, we discuss forces that mandate restructuring the U.S. health care system. Third, we describe central features of the PCM-DH and summarize evidence supporting the potential for the PCM-DH to improve health outcomes, increase access, and arrest increasing health care expenditures. Fourth, we comment on necessary changes in graduate medical and dental education to support the transition to a PCM-DH delivery system.

Lastly, we emphasize that HRSA is the primary Federal agency that focuses on delivering primary care to all Americans. Within HRSA, we summarize the critical role that Title VII, section 747 programs must serve to develop an infrastructure in training programs for the PCM-DH model of care. We also endorse a new role for HRSA to coordinate diverse groups' continuing medical education programs that retrain current primary care clinicians to practice in this new model of care.

RECOMMENDATIONS

The Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) recognizes that the development and evaluation of the PCM-DH is already underway through pilot programs nationwide. However, parallel initiatives are needed to develop the educational infrastructure to train clinicians to practice in the PCM-DH. The following nine recommendations to the Secretary of the Department of Health and Human Services, Congress, and HRSA address specific tasks for Title VII, section 747 to promote the implementation of the PCM-DH in the Nation's health care training programs as well as funding to accomplish these tasks:

1. Restore Funding

- We request that Congress fund Title VII, section 747 at the level previously requested in the 2006 Advisory Committee report, specifically \$215 million.
- These funds must restore support for existing Title VII, section 747 programs to at least 2003 levels (plus inflation);
- Partial support for the initiatives related to the PCM-DH (recommendations 2, 3, and 4) should come from this restored funding; and
- Support for Title VII, Section 747 programs has to be allocated equitably across the primary care disciplines of family medicine, internal medicine, pediatrics, physician assistant, general dentistry, pediatric dentistry.

2. Develop Curricula (undergraduate, graduate, and faculty)

- Title VII, section 747 should give priority to commissioning 30 expert educator teams to develop and evaluate new curricula on the skills,

attitudes, and knowledge base needed to practice effectively in the PCM-DH.

- The curricula will focus on training programs for physicians, dentists, and physician assistants;
- 3 to 5 teams will be selected from each of the Title VII primary care disciplines: family medicine, internal medicine, pediatrics, physician assistant, general dentistry, pediatric dentistry;
- These educators will come from diverse geographical regions; and
- Success will be measured by evaluation of these curricula in a conference of experts and by implementation of the best models in training programs nationally.

3. Train Leaders (post-graduate fellows and faculty, dentists)

- Title VII, section 747 should give priority to creating 25 non-degree training programs for 160 primary care post-graduate fellows/trainees and faculty clinician-educators annually who will become the leaders in implementing PCM-DH educational programs.
- 3-5 training programs will be from each of the six Title VII primary care disciplines;
- Fellows will complete a one-year training experience in each program and receive a certificate of completion from HRSA;
- This program should continue for at least five years to establish the leadership to train or retrain primary care clinicians to practice in the PCM-DH and;
- Success will be measured by evaluations of trainees' performance, completion of the program, career as a leading educator, and the proportion of primary care trainees entering each leader's program continuing in the field.
- Title VII, section 747 should give priority to creating 20 clinician-researcher training programs for 100 primary care post-graduate fellows/trainees and faculty annually to acquire the research skills necessary to evaluate the PCM-DH with regard to patient, clinician, and societal outcomes.
- 2-5 programs for each of the six Title VII primary care disciplines;
- This two-year clinician-researcher training initiative should continue for at least 6 years;

- Clinician researchers should be enrolled in degree granting programs such as MPH, MSCE, or MSED; and
- Success will be measured by degrees awarded, publications, presentations, and appointments to long-term research positions.

4. Pilot PC M-DH Educational Programs

- Title VII, section 747 should give priority to supporting and evaluating 50 two-year pilot projects of the PCM-DH in training programs followed by implementation of the most promising projects in 100 additional training settings. Pilot projects should emphasize innovations within a PCM-DH model of care that:
 - Define optimal delegation of responsibilities and coordination within the team;
 - Incorporate information technology;
 - Educate patients in self management and ways to reduce health literacy deficiencies;
 - Coordinate with providers outside of the PCM-DH;
 - Ensure continuous quality improvement;
 - Improve accessibility and continuity;
 - Increase providers' cultural competency;
 - Involve community-based training sites;
 - Demonstrate financial sustainability;
 - Represent all of the 6 Title VII primary care disciplines equitably; and
 - Show measurable benefits related to realistic patient, clinician, and societal outcomes.

5. Focus on Vulnerable Populations and Health Disparities

- Title VII should be charged with insuring that these curricula and training programs prepare clinicians to provide culturally competent, quality care for vulnerable populations within the PCM-DH.
 - Success will be determined from evidence that trainees have learned these skills, are publishing relevant research on the topic, and are meeting realistic improvements in health measures in targeted vulnerable populations.

6. Develop Infrastructure

- Congress should consider allocating additional resources to support Title VII, section 747 to become the key Federal resource for information about PCM-DH educational programs and support initiatives to establish a PCM-DH infrastructure in training programs.
- Congress should consider funding the basic infrastructure needed to implement the PCM-DH in training programs (medical, dental, and physician assistant). This infrastructure includes:
 - Hiring and training or retraining members of the interdisciplinary primary care team and allied support personnel;
 - Implementing an electronic medical record and other information systems;
 - Developing quality improvement systems and protocols to ensure high quality care across all team members; and
 - Implementing patient educational, behavioral support programs.

7. Coordinate Continuing Medical and Dental Education

- Congress should expand the authority of Title VII, section 747 to serve as the central Federal coordinating agency to ensure that organizations meet standards set by an expert panel for the PCM-DH in their continuing medical and dental education as well as in their maintenance of certification programs.
- Title VII, section 747 should oversee programs for clinicians from the six Title VII primary care disciplines; and
- Standards should be agreed upon by representatives from key primary care medical, dental, and physician assistant organizations.

8. Obtain Funding and Expanded Authority for Programs Related to the PCM-DH

- Recommendations 2, 3 and 4 relate to new programs under the purview of Title VII, section 747's current authority.
- \$60 million of the restored \$215 million funding requested in recommendation 1 should fund new PCM-DH programs;

- This funding must not detract from the restored support for ongoing programs; and
- An additional \$20 million is needed to fully support curriculum development, training of leading clinician-educators and investigators in the PCM-DH.
- Congress should expand the authority of Title VII, section 747 to address new programs described under recommendations 6 and 7.
- An additional \$5 million is needed for Title VII, section 747 to serve as the Federal resource on the development of the PCM-DH infrastructure in training programs and to coordinate oversight of continuing medical and dental education programs.

9. Conduct Evaluation

- Congress should commission a study by a respected external organization, such as the Institute of Medicine, to examine:
 - The most effective models for the Federal Government to support the PCM-DH;
 - The most effective methods of preparing diverse members of the health care workforce, including physicians, dentists, physicians assistants, nurses, and others, to practice in the PCM-DH;
 - The impact of debt relief on increasing interest in primary care training and practice and its effect on retention in primary care practice; and
 - The impact of changing funding for training to support longitudinal ambulatory care training, focusing on the PCM-DH model of care.

BACKGROUND EVIDENCE: THE HEALTH CARE ENVIRONMENT

The U.S. population has a significant burden of chronic disease as well as complex preventive care needs. Despite the overwhelming demand for primary care clinicians who can address both types of care, most types of clinicians have moved rapidly toward specialization and away from primary care. A broad consortium of primary care disciplines has

endorsed the immediate need to develop the Patient-Centered Medical-Dental Home (PCM-DH) to address the unmet health care needs of the American public by offering patient-centered, comprehensive, coordinated care delivered by a primary care team. The PCM-DH has the potential to renew clinician interest in primary care because it provides the infrastructure and funding necessary for it to serve as the fundamental basis of U.S. health care.

Changing Health Profiles and the Growing Need for Chronic Illness Care

From 2000 to 2030, the Nation's population will grow by an estimated 30 percent, from 282 million in 2000 to 363 million in 2030. By 2030, 19.3 percent of the U.S. population (70.3 million persons) will be 65 years or older, compared with just over 12 percent (37 million persons) in 2006. Many more Americans will be over age 85, growing by an estimated 3.6 million by 2030 (Federal Interagency Forum on Aging-Related Statistics, 2008). Our older population usually has multiple comorbidities. In 2000, nearly half of all Medicare beneficiaries had at least three chronic medical conditions, while one-fifth had five or more (Anderson & Horvath, 2002). The increasing clinical complexity of the American populace in coming decades will necessitate the development of systems of care that can manage patients with multiple chronic conditions instead of diseases in individual organ systems.

Younger Americans are also afflicted by multiple diseases owing, in large part, to an obesity epidemic. From 1994 to 2005, obesity rates in adults rose from 22.9 to 33.3 percent (Ogden, Carroll, McDowell, & Flegal, 2007). Nearly 80 percent of obese adults have at least one of the following conditions: diabetes, hypertension, coronary heart disease, high cholesterol, or osteoarthritis (Salinsky & Scott, 2003). Additional comorbidities related to obesity include: gallbladder disease, sleep apnea, reproductive complications, and cancer (e.g., uterine, gallbladder, breast, colon, and kidney) (Centers for Disease Control and Prevention [CDC], 2008). Management of obese patients and their comorbidities clearly places a great burden on the health care system (Bertakis & Azari, 2005; Zizza, Herring, Stevens, & Popkin, 2004).

Children and adolescents also have experienced dramatic increases in weight.¹ From 1980 to 1999, the percentage of overweight children more than doubled

¹ Note: The CDC does not use the term "obese" in referring to children and adolescents. Instead, children whose weight ranks above the 95th percentile for their age are referred to as "overweight." Children whose weight is from the 85th to the 95th percentile for their age are considered "at risk."

from 7 to 15 percent, and overweight adolescents almost tripled from 5 to 14 percent (Salinsky & Scott, 2003). As a result, chronic conditions that previously occurred only rarely in children, such as type 2 diabetes, high blood pressure, and high cholesterol, have become more common in younger Americans (Salinsky & Scott, 2003). Without effective interventions, the majority of overweight adolescents will become overweight or obese as adults (Fact Sheet: "Overweight in Children and Adolescents," U.S. Department of Health and Human Services [HHS], 2006).

Unless the health care system can deliver effective preventive care and coordinated management of complex chronic diseases, the costs of caring for older Americans as well as for overweight or obese younger Americans will skyrocket over the coming decades and strain the U.S. economy even further. Already, we spend vast sums on chronic disease care. Although Americans 65 or older constitute roughly one-eighth of the population, they consume about one-third of all health care expenditures. According to the Centers for Medicare and Medicaid Services (CMS), seniors spent 3.3 times more on health care than working-aged people (CMS, 2004). Care for obese persons also consumes a huge amount of resources, on the order of \$117 billion according to a Surgeon General's Report from earlier in the decade (Fact Sheet: "Overweight and Obesity: At a Glance," HHS, 2008). Publicly funded programs — Medicare and Medicaid — finance about half of the care for obese and overweight persons (Salinsky & Scott, 2003). In light of these staggering expenditures for potentially preventable diseases, the U.S. must restructure the health care system to emphasize prevention and early intervention. The team-based, coordinated, comprehensive care structure of the PCM-DH offers great promise to improve the delivery of both disease prevention and chronic disease care.

Uninsured Population

In 2006, 46.5 million Americans lacked health insurance (Kaiser Family Foundation [KFF], 2007). One study reported that 22.1 percent of the Nation's children had no coverage for dental care (Liu, Probst, Martin, Wang, & Salinas, 2007). The size of the uninsured has grown steadily from 2001 to 2005 despite more Americans being covered by Medicare, Medicaid, and other Federal and State programs (Holahan & Cook, 2007; Employment Benefits Research Institute, 2006). Although the majority of insured Americans is covered through its site of employment, this form of insurance dropped between 2000 and 2006 from 63.6 to 59.7 percent of the insured population (American College of Physicians [ACP], 2008).

More than half of all uninsured persons have at least one chronic medical condition and at least 10 percent report poor health (KFF, 2007). The uninsured are unlikely to receive recommended preventive care or disease management services (Ayanian, Weissman, Schneider, Ginsburg, & Zaslavsky, 2000; McWilliams, Meara, Zaslavsky, & Ayanian, 2007). Delays in needed medical and dental care result in increased costs when care is finally provided. Over half of uninsured Americans do not have a usual source of care, resulting in poor access to non-emergent care (KFF, 2007). The health care system must eventually shoulder the high costs of care for unnecessarily advanced diseases in our uninsured, mostly working, population. To avert this problem, the health care system must feature the coordinated and comprehensive PCM-DH.

Health Care Costs for the Insured

High costs of medical care also burden Americans with private or public health insurance (Medicare, Medicaid, SCHIP, or TRICARE). In 2005 and 2006, private insurance premiums for personal health care, excluding drugs, increased by over 7 percent annually, whereas out-of-pocket costs for co-pays increased by over 5 percent each year in the same period (Catlin, Cowan, Hartman, Heffler, & National Health Expenditure Accounts Team, 2008). Continually rising out-of-pocket payments add further urgency to the call for health care reform.

Health Disparities

The Institute of Medicine's (IOM's) 2002 study of health disparities, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, reported that "racial and ethnic disparities in health care exist and ... are associated with worse outcomes in many cases." By 2030, Latinos are projected to rise from 12.6 to 20.1 percent of the U.S. population, African Americans will increase somewhat from 12.7 to 13.9 percent, and the proportion of Asian Americans will nearly double from 3.8 to 6.2 percent (U.S. Census Bureau, 2004). Because racial and ethnic minorities are less likely to be insured or to have a usual source of care, these demographic changes will result in more unmet health care needs unless we restructure our health care system (Agency for Healthcare Research and Quality [AHRQ], 2003, 2004, 2005, 2006). Health disparities exact a personal and societal toll. One study estimated that these inequities produced nearly 900,000 excess deaths in minorities from 1991 to 2000 (Woolf, Johnson, Fryer, Rust, & Satcher, 2004).

In addressing the multiple factors contributing to disparities in care, the IOM recommended that the U.S. should be “strengthening the doctor-patient relationship, increasing the proportion of underrepresented U.S. racial and ethnic minorities among health professionals, and using evidence to ensure consistency in the delivery of care” (IOM, 2002). The PCM-DH features a personal physician or dentist who leads a multidisciplinary team to deliver culturally competent, evidence-based care. Title VII, section 747 must ensure that training programs can prepare adequate numbers of physicians and dentists from minority groups to practice effectively in this model of care.

Community health centers will also play a critical role. An AHRQ report found that patients treated in community health centers that primarily serve vulnerable populations receive better preventive care than the general population (AHRQ, 2004). Patients receiving care in these centers have been reported to have several types of improved health outcomes (O’Malley, Forrest, Politzer, Wulu, & Shi, 2005). Therefore, a strong system of primary care services, especially through community health programs featuring the PCM-DH, promises to have a special benefit for minorities and the disadvantaged in the U.S.

Health Care Expenditures and Health Outcomes

By 2006, health care expenditures reached \$2.1 trillion, or 16 percent, of the U.S. gross domestic product (GDP), averaging \$7,020 for every man, woman, and child (CMS, U.S. Department of Commerce, & U.S. Census Bureau, 2006). By 2015, this total is expected to be staggering \$4 trillion, or 20 percent, of the GDP (ACP, 2008). In contrast, Switzerland, the nation with the next highest per capita health care expenditures, spends only two-thirds as much as the U.S. while Canada, France, Germany, Japan, and the United Kingdom spend about half as much (ACP, 2008). Despite these high expenditures, the U.S. population has poorer status on numerous health measures compared with these countries (e.g., life expectancy at birth, infant mortality, and deaths from diabetes and diseases of the respiratory system) (ACP, 2008).

Higher U.S. health care expenditures result, in large part, from more costly procedure-based specialty care and heavy reliance on acute inpatient resources (Fisher, 2006). Current health care payment policies both dictate and drive these practice patterns (Bodenheimer & Fernandez, 2005). Reimbursement policies richly reward procedures and tests while devaluing primary

care. For example, half an hour spent performing a diagnostic, surgical, or imaging procedure generally pays three times more than same amount of time devoted to a primary care visit in which the physician manages patients with multiple complicated diseases, such as diabetes, heart failure, headache, and depression (Bodenheimer, 2006).

As the single largest purchaser of health care in the U.S., Medicare sets the standard for the health care payment rates and policies that private insurers often follow (Carroll, 2006). Recent Medicare reviews show steady increases in reimbursement for tests such as advanced imaging. Simultaneously, Medicare payments consistently undervalue the preventive, evaluative, and management services that primary care physicians provide (ACP, 2006). Reimbursement policies also increasingly reward quantity over quality, so that primary care physicians cannot spend the necessary time required to deliver high-quality, patient-oriented, evidence-based care (Bodenheimer, 2006).

These gross disparities in the payment system have led to wide disparities between the incomes of primary care physicians and specialists. In 2004, the median income of specialists was almost twice that of primary care physicians, and this gap continues to grow (Bodenheimer, 2006). From 1995 to 2003, inflation-adjusted income decreased by 7.1 percent for all physicians, but 10.2 percent for primary care physicians (Tu & Ginsberg, 2006). This decline has exacerbated baseline salary deficits for primary care physicians. According to the ACP, “immediate and comprehensive reforms” must be implemented to prevent the collapse of primary care. Further, the ACP warns that, without these urgent reforms the U.S. will experience “higher costs, greater inefficiency, lower quality, more uninsured persons and growing patient and physician dissatisfaction” (ACP, 2006).

Importance of Primary Care to Population Health, Prevention, and Chronic Disease Care

National and international studies have found that primary care improves health more than specialist care (Starfield, Shi, & Macinko, 2005). Countries with a strong primary care system also have better early childhood health outcomes (Starfield & Shi, 2004). A meta-analysis of 17 studies from 1985 through 2005 concluded that a larger supply of primary care physicians was associated with greater self-rated health and less all-cause adult mortality, infant mortality, and low birthweight (Macinko, Starfield, & Shi, 2007).

Other countries offer instructive examples of successful health care systems based on a foundation of primary care. Denmark's system of patient-centered primary care is accessible, efficient, and uses an advanced information technology infrastructure to facilitate communication and coordination of care. Danes are more satisfied with their care than residents of any other European country (Davis, 2007). Factors that contribute to this success include:

- Each citizen has a primary care physician who earns a monthly payment for serving as the patient's medical home, in addition to fees for particular services provided.
- Care is accessible any time of day or night, including weekends. Patients reach physicians directly by telephone, and the physician can access the patient's records and prescribe medications electronically. Physicians are paid for telephone and e-mail consultations.
- All primary care physicians use an electronic medical record system.
- National system exists for patient health care information exchange.

Even in less developed countries, primary care providers can reduce disparities between socially deprived and more advantaged populations. For example, in Mexico, one study found that several features of primary care delivery were associated with lower odds of childhood death in indigent areas (Reyes, Perez-Cuevas, Salmeron, Tome, Gusicafre, & Gutierrez, 1997).

An adequate supply of primary care physicians permits patients to have a regular source of care that, in turn, has been associated with improved delivery of preventive care (Bindman, Grumbach, Osmond, Vranizan, & Stewart, 1996). In the U.S. a greater supply of family physicians has been linked to earlier detection of cancer (i.e., breast, colon, cervical, and melanoma) (Campbell, Ramirez, Perez, & Roetzheim, 2003). In terms of health maintenance, primary care appears to increase healthful behaviors, such as breast-feeding, seat belt use, physical activity, and a healthier diet (Starfield, Shi, & Macinko, 2005). Primary care services have also increased smoking cessation and influenza immunization (Saver, 2002). Rates of obesity are lower in states with higher ratios of primary care physicians to the population (Shi & Starfield, 2000).

Primary care physicians currently care for most patients with chronic disease (Rothman & Wagner, 2003)

but do so in a dysfunctional practice environment. Even so, patients with multiple chronic conditions benefit from the broad clinical expertise and care coordination of a primary care physician. For some chronic conditions, such as diabetes and hypertension, studies have shown that primary care physicians can provide similar quality of care to that of specialists while using fewer resources (ACP, 2006). Furthermore, primary care physicians typically offer more education in behavioral change and self-care support than specialists (Rothman & Wagner, 2003). Among patients with serious chronic illness, those who relied more on primary care had improved quality of care, lower utilization rates (e.g. physician visits, intensive care days, and hospitalizations) and lower Medicare expenditures (Center for the Evaluative Clinical Sciences, 2006). But primary care practices cannot continue to provide quality care in the current health care system.

Supply and Demand and the Critical Need for Primary Care

The challenge of providing preventive care while treating acute and chronic diseases burdens primary care physicians far more than it does specialists (Pimlott, 2008). Inadequate reimbursement for primary care services exacerbates this untenable situation (Bodenheimer, 2006). To make ends meet, primary care physicians are forced to see more patients in less time. This approach not only fails to serve patients well but it also decreases the physician's work satisfaction. Not surprisingly, in this climate of growing demands and shrinking compensation, many experienced primary care physicians choose early retirement (Barr & Ginsburg, 2006; ACP, 2006).

The same pressures and disincentives have decreased the number of physician assistants (PAs) in primary care. An increasing proportion of physician assistants are choosing to work in subspecialty practices. From 1995 to 2005, the proportion of PAs practicing in one of the primary care specialties declined from 50 to 41 percent (American Academy of Physician Assistants [AAPA], 2008; Morgan & Hooker, 2008). The impending shortage of primary care physicians, dentists, and PAs directly threatens this essential primary care component of the U.S. health care system and with it the possibility of realizing the promise of the PCM-DH (ACP, 2006).

Few physicians-in-training are willing to replace the diminishing supply of primary care physicians. For example, the number of young physicians entering training programs in the primary care disciplines

of internal medicine, family medicine, pediatrics, and combined internal medicine-pediatrics has shrunk precipitously since 1998 (Whitcomb & Cohen, 2004). From 1997 to 2005, the number of U.S. graduates training to become family practitioners dropped by 50 percent and the number training to become general internists experienced a similar decline. The reasons for the plummeting numbers of students choosing primary care are complex, but debt burden with the promise of greater compensation in subspecialties along with lifestyle issues contribute substantially (ACP, 2006). Hospitalists who practice only in the inpatient setting represent yet another drain on the supply of primary care physicians who deliver longitudinal outpatient care (Society of Hospital Medicine, 2007). Indeed, if one excludes hospitalists from the count of primary care physicians, the rate of disappearance of primary care physicians would be even more striking.

The same pressures and disincentives have led to an increasing proportion of PAs choosing to work in subspecialty practices. For example, while the proportion of PAs practicing in family medicine fell from 37 to 28 percent from 1995 to 2005, the absolute number of PAs practicing in family medicine grew from about 10,000 to 16,600 over the same time period, an absolute increase of almost 40 percent (AAPA, 2008). Currently, one PA is practicing in the U.S. for every 10 to 12 practicing physicians. In the future, this ratio may tilt more toward PAs because annually about one PA graduates (2 year training) for every five physicians (usually 7 year training). In 2006, one PA practiced in family medicine for every six family medicine physicians (AAPA, 2008; Morgan & Hooker, 2008). The nurse practitioner (NP) workforce has also grown. In 2006, PAs and NPs combined totaled one sixth of the U.S. medical workforce (Hooker, 2006). As the proportion of the workforce filled by PAs and NPs increases, the PCM-DH team-based model becomes more feasible where the physician leads a team of clinicians.

To fill the gap left by a dearth of primary care providers, retail-based organizations like Wal-Mart, Target, and pharmacies have established 400 clinics in 18 states (Russell, 2007). While these store-based clinics may deliver episodic care, they likely fragment patient care by failing to deliver most preventive services or long-term coordinated care for chronic diseases. The providers in these for-profit, store-based settings are unlikely to communicate with other clinicians, risking safety lapses when treatments and test results are not shared. In addition, these sources of care are relatively unregulated and carry the theoretical risk of promoting

the use of the medications and products in the stores where they are located.

Similarly, dentists may also face supply challenges as they move toward more widespread adoption of the dental home model. The dental home focus is to strengthen pediatric and general dentistry trainees' experiences that promote the dental home, including an infant oral examination by age one and interdisciplinary linkages with primary care medical providers in coordinating overall patient care. While a National shortage of dentists may not exist, a significant maldistribution of dentists has occurred (Seldin, 2001). In addition, increased efforts are required to train a racially and ethnically diverse workforce of dentists who can meet the needs of a diverse U.S. population. The American Dental Association's Future of Dentistry, or FOD, report highlights that, since 1990, fewer minorities (i.e., Hispanic, African American, American Indian, or Asian/Pacific Islander) are training in dental medicine (Seldin, 2001).

The Council on Graduate Medical Education (COGME) has repeatedly recommended that Federal policy support the training of an appropriate mix of physician specialties to improve the health status of all Americans (COGME, 2007a, 2007b, 2005). Clearly, the need for more primary care physicians is urgent (ACP, 2006). As the major Federal agency that influences the content and capacity of primary care training programs, HRSA, along with the Secretary of Health and Human Services and Congress, must support initiatives such as those we recommend for Title VII, section 747 that will develop the educational and evidence-based infrastructure needed to underpin the implementation of the PCM-DH.

THE MEDICAL-DENTAL HOME

The March 2001 report of the Institute of Medicine (IOM) entitled, *Crossing the Quality Chasm: a New Health System for the 21st Century*, urgently called for major reforms in the U.S. health care system, with a special emphasis on the need for higher quality, more coordinated care for the chronically ill. The IOM 2001 report states:

Chronic conditions are now the leading cause of illness, disability, and death; they affect almost half of the U.S. population and account for the majority of health care expenditures (...) yet there remains a dearth of clinical programs with the infrastructure

required to provide the full complement of services needed by people with heart disease, diabetes, asthma, and other common chronic conditions. (pp. 3–4)

The PCM-DH offers a critical approach to respond to this need for a new infrastructure to manage chronic diseases. The American Academy of Pediatrics (AAP) first conceptualized a primary care medical home model to be accessible, continuous, comprehensive, family-centered, coordinated, and compassionate (American Academy of Pediatrics, 2002). It is founded on the premise that children and families benefit when a trusted, familiar, and well-trained physician oversees and coordinates all care services, instead of the fragmented care that many families receive in emergency departments, walk-in clinics, and hospitals.

Concurrently, the American Academy of Pediatric Dentistry (AAPD) developed a policy on dental homes that was first adopted in 2001 and revised in 2004 (AAPD, 2004). The definition states:

“The dental home is the ongoing relationship between the dentist and the patient, inclusive of all aspects of oral health care delivered in a comprehensive, continuously accessible, coordinated, and family-centered way. Establishment of a dental home begins no later than 12 months of age and includes referral to dental specialists when appropriate.”

Similar to the medical home, the dental home offers patients comprehensive, continuous, prevention-based care that is accessible, family-centered, compassionate, and culturally competent. Citing strong clinical evidence that early preventive dental care promotes oral health, the AAPD declared that “the establishment of a dental home may follow the medical home model as a cost-effective and higher quality health care alternative to emergency care situations” (AAPD, 2004).

In 2007, a joint committee of the four largest primary care organizations, including the AAP, American Academy of Family Physicians (AAFP), American College of Physicians (ACP), and American Osteopathic Association (AOA), developed a consensus statement that describes seven defining principles of the PCMH (Patient Centered Primary Care Collaborative, 2007, November). Table 1 outlines each of these characteristics of the PCMH as well as the anticipated impact on health care delivery, costs, and outcomes. Many of these characteristics are applicable to the dental home.

At the center of the PCM-DH is a trusting relationship between the patient and his/her personal provider who leads a team to address the patient’s needs. Generally, this provider is a primary care physician but, for dental care, it could be a dentist. In specific cases, it could be another type of physician, such as a pulmonologist for patients with severe emphysema or a rheumatologist for patients with active inflammatory arthritis. However, if specialists choose to lead a PCM-DH, they must be willing to deliver comprehensive preventive care and broad-based multi-disease management within a multi-disciplinary team-based setting. PAs or NPs could serve an important role in directly providing services where there is an insufficient supply of primary care physicians, but they need to be linked to a physician-led PCM-DH through telecommunications.

The Accreditation Council for Graduate Medical Education (ACGME) lists six competencies that medical residency training programs must consider: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice (ACGME, 2007). Table 1 demonstrates the interrelationships of the ACGME competencies with the characteristics of the PCMH. These topics will be the focus of the curricula to be developed through the first, second, third, and fourth recommendations for Title VII, section 747. We emphasize that to prepare clinicians to practice in the PCM-DH, training must occur in community-based settings and address safety and quality initiatives, coordination of care across settings and transitions of care, use of information technology for registries, practice improvement initiatives, and patient education.

The Chronic Care Model, developed initially by Ed Wagner, offers an organizing structure (Wagner, 1998) that informs many of the features of the PCM-DH. However, the PCM-DH is more complex and broader than the Chronic Care Model, addressing multiple diseases as well as prevention. The basic elements of the Chronic Care Model include: clinical case management with regular follow-up by a care team, use of evidence-based guidelines, use of clinical information systems to ensure ready access to patient data, effective self-management support for patients, and building of partnerships with community programs to promote patient health. A recent meta-analysis of interventions incorporating at least one of the elements of the Chronic Care Model finds improved processes of care and clinical outcomes, with lesser improvement in quality of life, for patients with chronic illnesses (Tsai, Morton, Mangione, & Keeler, 2005). Other studies of the Chronic Care Model in practice have found that:

Table 1: ACGME Competencies and the PCM-DH

MEDICAL HOME CHARACTERISTICS	ACGME COMPETENCIES					
	Patient Care	Medical Knowledge	Interpersonal and Communication Skills	Professionalism	Systems-Based Practice	Practice-Based Learning and Improvement
Personal Physician (Includes PA, NP, & Dentist)	Providers equipped to provide personalized care	Knowledge of medical home and management skills of personal physician	Motivational interviewing, pt. self-mgmt., partnership care model	Ethical responsibility of primary provider, legal issues in pt. decision-making, role of organized medicine	Role of personal physician in system improvement, cost issues	Examine practice patterns, patient needs, data-driven continuing education
Physician-Directed Medical Practice	Physician oversees improved access, safety, self-management support	Competent to work in an interdisciplinary team, effective use of health information technology	Effective utilization of community resources and follow-up	Clear roles for team members, with accountability	Division of responsibilities to team members; benchmarking and continuous quality improvement	Team members engaged in quality improvement (QI), error ascertainment, root cause analysis
Whole Person Orientation	Respect for patient preferences; role of social, cultural context	Behavioral components of illness and preventive care	Active listening, collaborative decision-making involves pt. and caregiver	Respect for patient autonomy and justice	Patient/caregiver focus of system of care	QI informed by holistic approach and patient-centered processes/outcomes
Coordinated/Integrated Care	Systematic communication to other providers; use of telemedicine, tele-monitoring	Trained to coordinate diverse patient care settings and in effective transitions of care	Clearly defined expectations / plans; support of patient health record and med. mgmt.	Timely responses to patient needs – 24/7, accessible to patients	Knowledge of settings of care, payers, agencies applied to pt. needs	QI and patient satisfaction in management decisions
Quality and Safety	Evidence-based, incorporation of behavioral science	Safe practice, IOM six quality domains	Pt.-centered communication and services	Minimize errors, optimize outcomes	Cost awareness, risk-benefit basis for decision-making	Continuous redesign, develop better measures
Enhanced Access	Timely care, prev. svcs., follow-up to support for behavior change	Practice management skills in training	Group sessions, phone/fax/email access	Use of multiple modes of communication	Effective use of referrals, tracking	Reduce delays, optimal workforce availability
Payment	Stable primary care workforce with time for patients/caregivers	Understanding of payment system and regulatory bodies	Collaborative decision-making in risk, benefit, cost	Fewer financial barriers to services of team or outside resources	Cost effective, increase appropriateness of care	Effective QI supports financial stability of practice

Source: AAFP, AAP, ACP, & AOA (March 2007). Joint Principles of the Patient-Centered Medical Home. Available at <http://www.medicalhomeinfo.org/Joint%20Statement.pdf>.

- Diabetic patients treated in a setting following the Chronic Care Model had a significant reduction in their risk of cardiovascular disease (Vargas et al., 2007).
- In a randomized controlled trial, diabetic patients in the Chronic Care Model treatment group had significantly lower hemoglobin A1C levels and non-HDL cholesterol than controls (Piatt et al., 2006).
- Patients with congestive heart failure who received treatment in a Chronic Care Model were more knowledgeable about their symptoms and effective mechanisms to control their condition, reported better communication with their doctor, and had better self-management skills than control patients (Baker et al., 2005).

- Applying Chronic Care Model components (i.e., self-management support, decision support, planned encounters, and care coordinators) to treatment of bipolar disorder significantly reduced the duration of manic episodes in severely affected, clinically complex individuals. In addition, functional outcomes improved significantly (Bauer et al., 2006).
- Among low-income Latinas with comorbid depression and cancer, application of Chronic Care Model precepts (i.e., proactive care, case management, self-management support, and feedback to physicians) resulted in a significant reduction in depressive symptoms (Dwight-Johnson, Ell, & Lee, 2005).

Although the Chronic Care Model was initially conceptualized to address one disease at a time, this model and the more comprehensive PCM-DH both feature team-based care, information technology, promotion of an active partnership with the educated patient, and coordination of care. This infrastructure helps reinforce patients' compliance with prescribed treatments and behavioral interventions (IOM, 2002). A recent survey found that 77 percent of adults with a chronic condition receiving care in a PCMH-type setting received a plan from their physician to manage their condition more effectively at home versus 35 percent of adults with chronic conditions without this model of care (Beal, Doty, Hernandez, Shea, & Davis, 2007).

The PCM-DH relies on information technology to enhance health care delivery and service to patients, but currently most primary care practices have not been able to afford the time and money to implement electronic medical records. The future of effective health care in the U.S. both within and outside of the PCM-DH depends on widespread adoption of the electronic medical records. Electronic medical records not only promote effective coordination of care but promise to improve quality, safety, and efficiency in primary care (Bates, Ebell, Gotlieb, Zapp, & Mullins, 2003). We recommend that Congress facilitate and support the implementation of information technology in medical training programs throughout the Nation.

In the PCM-DH, the multidisciplinary team can span many types of providers, such as physicians, dentists, PAs, nurses, dietitians, social workers, behavioral health specialists, psychologists, and other allied health professionals. The multidisciplinary team approach facilitates patient education, implementation of behavioral interventions, and preventive strategies designed to reduce patients' risky behaviors and conditions such as smoking, inactivity, and obesity (Hill &

Miller, 1996). The PCM-DH also enhances patients' access to care through systems such as open access scheduling, expanded office hours, and new options for communication between patients and their personal physician, dentist, or office staff. Although the PCM-DH model of care is still evolving, increasing evidence from early pilot studies demonstrates its benefits for patients, physicians, dentists, and society. However, more pilot work is specifically needed in training programs to prepare future clinicians to function effectively in this new model of care (4th recommendation).

Empiric Evidence of the Value of the Medical-Dental Home

Because the PCM-DH first targeted children with significant health care needs, most research on the impact of this model of care comes from studies of clinically complex children, but research has also shown benefits in adults:

- Use of reminders for recommended preventive care increases (Beal, Doty, Hernandez, Shea, & Davis, 2007).
- Parents and children are more likely to receive behavioral and mental health screening, appropriate referrals, and follow-up care (Rosman, Perry, & Hepburn, 2005).
- Children have immunizations that are more complete, higher rates of well child visits, lower rates of visits for illness care, and fewer emergency room visits (Kempe, Beaty, Englund, Roark, Hester, & Steiner, 2000).
- Children in a dental home are more likely to receive appropriate preventive and routine oral health care, thereby reducing the risk of preventable dental/oral disease (AAPD, 2004).
- Children with special health care needs who had a personal physician or nurse in the context of a PCM-DH are significantly less likely to have unmet dental needs than those without this care (Lewis, Robertson, & Phelps, 2005).
- Parents of special needs children report significantly fewer unmet health care and family support service needs if they belonged to a PCM-DH (Strickland, McPherson, Weissman, van Dyck, Huang, & Newa-check, 2004).
- A PCMH-type model for diabetic patients leads to improved patient health outcomes and greater

patient satisfaction (Campbell, Ramirez, Perez, & Roetzheim, 2003; Roblin, Kaplan, Greenfield, Roberts, Jacobs, & Carlton, 2002).

On primary care teams, NPs and PAs complement physician services by insuring that patients receive necessary preventive services (Druss, Marcus, Olfson, Tanielian, & Pincus, 2003). These clinicians are specifically trained to help patients with self-care by emphasizing adherence to treatment, behavior change strategies, and treatment protocols (Rodriguez, Rogers, Marshall, & Safran, 2007). Nurse practitioners educate patients about health behaviors more than busy physicians do (Hung, Rundall, Crabtree, Talia, Cohen, & Halpin, 2006). Some evidence also suggests that multidisciplinary teams are associated with better decisions and less staff turnover (Rodriguez, Rogers, Marshall, & Safran, 2007).

Cost-Effectiveness of the Medical-Dental Home

Emerging evidence suggests that the PCM-DH can reduce or at least control rising health care costs. A Commonwealth Fund study, *Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending*, estimated that enrolling all Medicare fee-for-service beneficiaries in a PCMH setting would result in a net savings of \$194 billion over a 10-year period (Schoen, Guterman, Shih, Lau, Kasimow, Gauthier, et al. 2007). According to the report, the electronic medical record, an important part of the PCM-DH, will lead to an additional projected savings of \$88 billion over the same timeframe.

North Carolina's Medicaid program, Community Care of North Carolina (CCNC), established regional networks of hospitals, providers, community organizations, and social services agencies to improve care for Medicaid recipients. In total, 246 providers and/or practices were structured to provide accessible care coordination for 252,190 Medicaid beneficiaries. This program was found to reduce health care expenditures for persons with asthma and diabetes (Ricketts, Greene, Silberman, Howard, & Poley, 2004). An evaluation performed by Mercer Government Human Services Consulting reported that the CCNC program saved the state \$195 to \$215 million in 2003 and \$230 to \$260 million in 2004 compared with historical fee-for-service program benchmarks in the same timeframe (Wilhide & Henderson, 2006). Cost savings have also been associated with primary care teams that take advantage of NPs and PAs (Roblin, Howard, Becker, Adams, &

Roberts, 2004; Grzybicki, Sullivan, Oppy, Bethke, & Raab, 2002; Hooker, 2002; Venning, Durie, Roland, Roberts, & Leese, 2000).

Planned Pilot Studies of the Medical-Dental Home

At the National level, the Tax Relief and Health Care Act of 2006 authorized a Medicare Medical Home Demonstration project, to be implemented in September 2008. As many as eight states will provide a medical home to Medicare beneficiaries with chronic health conditions or prolonged illness. In partnership with each patient, physicians will develop a plan for ongoing care that is coordinated with other physicians, medical personnel, or agencies furnishing care to the patient. Additionally, they will use evidence-based decision support tools and health information technology to record and track the health status of patients. Finally, participating physician practices will help patients self-manage their conditions through education and support services (Guadagnino, 2007). The PCMH pilots will compensate participating physicians with a combination of fee-for-service payments, a care management fee for each patient, and an additional fee dependent upon quality improvement and cost containment.

The UnitedHealth Group, in collaboration with the AAFP, the AAP, and the ACP, plans to launch a PCMH pilot program in Florida (Porter, 2007). Under this program, six medical homes will offer extended access services, such as a 24/7 nurse triage, outreach to patients in need of clinical interventions, and patient education to promote self-management. Participating physicians will receive payment for serving as PCMH providers and for demonstrating measurable improvements in the overall health of their patients.

Another initiative sponsored by The Commonwealth Fund brings the PCMH to safety-net clinics throughout the U.S. Over the course of 5 years, Qualis Health, a Seattle-based quality improvement organization, in partnership with the McColl Institute for Healthcare Innovation, will provide technical assistance to 50 clinics serving underserved or economically disadvantaged communities in four geographic regions. Training will aim to improve communication, ensure timeliness and availability of appointments, and enhance team-based care delivery to meet each patient's needs (Improving Chronic Illness Care, 2008).

Finally, the potential health and economic benefits of PCM-DH have prompted more U.S. businesses to experiment with this model for their employees'

health care. Based on positive results for employees in a PCMH, Paul Grundy, M.D., chairperson of an IBM program, concluded that the PCMH could help businesses “improve quality, achieve high employee satisfaction and contain health care costs” (Patient-Centered Primary Care Collaborative, 2007).

However, these PCM-DH initiatives do not adequately target the key network of physician, dental, and PA training programs throughout the Nation. Title VII, section 747 must play a central role in funding innovative pilot studies within academic centers and community-based training settings. The Advisory Committee regards Title VII, section 747 as the stimulus for short-term pilot programs (4th recommendation) of novel approaches to train in a PCM-DH in an academic center or affiliated teaching practice setting. We warn that waiting until other pilot programs are concluded before working on the training infrastructure may doom primary care to oblivion because we will not be prepared to train future clinicians to staff this new model of care. As the key Federal agency charged with oversight of primary care programs and training, HRSA should also be a central resource of information on developing the infrastructure and implementing training programs to prepare physicians to practice in the PCM-DH (6th recommendation).

Challenges to Implementing the Medical-Dental Home

Numerous challenges need to be addressed before broad implementation of the PCM-DH can be realized, and Title VII, section 747 must play a critical role in addressing them. First, we simply do not have enough trained clinicians to staff this model of care. Retooling practices and re-educating clinicians to deliver team-based care will require substantial short- and long-term financial resources. Title VII, section 747’s existing faculty development programs need to be augmented with additional training opportunities for both clinician-educators and clinician-researchers who will focus on the application of this new model of care in diverse settings (2nd and 3rd recommendations). Title VII, section 747 needs to ensure that the PCM-DH will address well-known health disparities in preventive care and care of chronic diseases (5th recommendation). Research conducted by primary care fellows and faculty, including physicians, PAs, and dentists, trained through Title VII, section 747 programs, must be supported to define the most effective use of this technology to reduce health care disparities, improve quality of care,

and reduce the staggering growth in health care costs (3rd recommendation). In particular, they need to evaluate clinically relevant outcomes of this care in diverse community-based training settings.

Coordination of care underpinning the PCM-DH requires productive use of information technology. As we recommend, it is vital for Congress to ensure that training programs can implement this infrastructure and to develop payment systems that allow providers to use and maintain these key components of the PCM-DH (6th recommendation). Coordination of care places great demands on physician and staff time that is currently uncompensated. Many practices cannot afford the up-front costs of implementing computer-based records or the potentially expensive maintenance of this system. Payers may need to support the PCM-DH with up-front funding and by sharing any cost savings from reduced hospitalizations and more cost-effective outpatient care. The PCM-DH infrastructure has been developed to improve patient outcomes, control rising expenditures, and make primary care a more satisfying and attractive career option.

Current provider training programs do not educate young physicians, PAs, and dentists in the fundamental precepts of the PCM-DH. They need to learn how to deliver team-based care, use health information technology to improve care, and adopt evidence-based principles in practice. Continuous quality improvement methodologies must also become part of the curriculum. The development and implementation of educational programs to prepare the U.S. health care workforce to practice in the PCM-DH offer a key opportunity and responsibility for Title VII, section 747 (1st recommendation). However, the current mandate for this program falls short in achieving the goal of promoting a cost-effective, high-quality health care system focused on primary care. The authority of this program needs to be expanded to include the development and implementation of continuing medical education (CME) and continuing dental education (CDE) that will retrain practicing primary care physicians, PAs, and dentists to practice in a PCM-DH model of care (7th recommendation). An explication of the central role of Title VII, section 747 in training physicians, PAs, and dentists at all levels of educational attainment in the precepts of practicing in the PCM-DH follows.

CHANGES NEEDED IN MEDICAL AND DENTAL EDUCATION

To institute the PCM-DH in this country, a transformation must occur in which physicians and dentists who practice independently with minimal staff support or use of information technology will need to learn to adopt the Chronic Care Model. Medical and dental training programs need to develop innovative training models that reflect evolving models of health care delivery, such as the PCM-DH. As noted by the Council on Graduate Medical Education (COGME), training programs must emphasize health care systems, health of populations, patient- and family-centered care, continuous care, prevention, and wellness, as well as the use of point-of-service, evidence-based clinical information (COGME, 2007b). A variety of organizations are undertaking CME and CDE programs to help primary care clinicians prepare to deliver care in a PCM-DH. However, as we note in our recommendations, it is critical for one Federal agency to oversee these efforts to ensure consistency with the principles defined below and the context outlined in Table 1 (7th recommendation). The Advisory Committee believes that no other Federal agency or educational oversight board has HRSA's focus on primary care. Therefore, we recommend that Title VII must be granted additional authority to oversee the myriad of CME and CDE efforts that are and will be undertaken to prepare the Nation's primary care clinicians for practice in the PCM-DH.

The seven joint principles of the PCMH, developed by the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), and the American Osteopathic Association (AOA), are cited below as a framework to describe in more specific terms the changes that training programs will need to adopt to advance the PCM-DH model of care. These changes will be the focus of the curriculum development work that we recommend should be funded by Title VII, section 747 programs. These efforts should complement those of other organizations such as the Association of American Medical Colleges' MedEdPortal. These principles represent an ideal vision for optimal health care delivery, but they cannot be realized without full-scale health care reform. Nonetheless, primary medical and dental training programs offer an important avenue for initiating some of the changes that will support successful use of the PCM-DH.

Principle 1. *Personal physician or dentist – Each patient has an ongoing relationship with a personal*

physician or dentist trained to provide first-contact, continuous, and comprehensive care. Physician assistants as well as nurse practitioners are key members of the health care team.

Medical and dental training programs should emphasize delivery of patient-centered, culturally sensitive, evidence-based care, to ensure that patients trust their provider, and rely on that provider for all of their ongoing health care needs. This trusting relationship needs to extend to the allied health team that the personal physician or dentist employs to ensure greater accessibility, coordination, and comprehensiveness of care.

Providers also need to develop the skills that will allow them to serve as facilitators, educators, and advocates on behalf of their patients. This principle requires that physicians and dentists develop a set of “relationship-oriented” skills that reinforce the sense of an enduring relationship between the personal physician and dentist, the patient, and the PCM-DH. Essential elements of this relationship include: mutual respect, continuity within the team, a focus on the patient's broad needs, and a commitment to culturally sensitive, effective communication (Scherger, 2007). New training models need to help providers become facile with e-communication methodologies and telehealth, to extend the conventional verbal and non-verbal communication they have with their patients.

Principle 2. *Team directed medical or dental practice – A team of individuals with diverse backgrounds and training collectively take responsibility for the ongoing care of patients.*

Interdisciplinary teams include physicians, dentists, nurses, NPs, PAs, licensed practical nurses, dental hygienists, medical assistants, dental assistants, pharmacists, social workers, behavioral health specialists, home health aides, and, potentially, peer navigators who are trained to support patients in adopting health-promoting behaviors. Key issues for the PCM-DH to address include facilitating transitions in care and maintaining excellent communication and coordination as patients seek care from other specialists, and undergo procedures and tests in outpatient, inpatient, and other short- and long-term settings.

Residency training needs to incorporate a wide range of skills to support the interdisciplinary team-based approach to health care delivery, including leadership training, team building, team membership skills, and experience in delegating responsibilities and monitoring performance. To support future team-directed medical

and dental practices, training programs should focus on developing management skills, providing constructive feedback, delegating specific aspects of care, and developing mechanisms to ensure effective communications among all team members. Management and communication skills training are not yet part of medical and dental training but may be critical to the success of this new model of care. In the same way, other health care professions will need to modify their training programs to meet these changing needs.

Principle 3. *Whole person orientation – The health care provider is responsible for overseeing and coordinating all the patient’s health care needs and taking responsibility for promoting health maintenance and managing diseases through to end-of-life care. These are essential aspects of comprehensive care.*

Training programs need to prepare primary care clinicians to care for the patient over the long-term, through periods of both health and illness. Primary care physicians and dentists will need training in effective communication skills and coordination so that they are prepared to work with specialists and clinicians as members of the patient’s team. Ideally, primary medical and dental training also will empower physicians to effectively communicate with their patients, convey the importance of their patient-primary care doctor relationship, and emphasize the value of remaining connected to their PCM-DH. Specific aspects of the training program need to help the provider learn to use the team and medical and dental technology to help the patient stay healthy by avoiding chronic diseases that are a consequence of unhealthy behaviors. However, when death is near, the provider needs to know how to use health system resources effectively and judiciously to make end-of-life care as positive an experience as possible for both the patient and his or her caregivers.

Principle 4. *Coordinated and/or integrated care across all elements of the complex health care system (e.g., subspecialty care, hospitals, home health agencies, and nursing homes) and the patient’s community (e.g., family, and public and private community-based services). – Care is facilitated by registries, information technology, health information exchange, and other means to ensure that patients get the indicated care when and where they need and want it in a culturally and linguistically appropriate manner.*

Health information technology and electronic medical records underpin the primary care provider’s ability

to coordinate care. Electronic medical records serve as a central resource for patient information to communicate with other providers and to evaluate quality of care. Health information technology supports effective clinical decision making by ensuring complete data availability at the time of service. Electronic patient registries promise to reduce medical errors and increase the ability to target appropriate interventions to specific patient groups. Information technology and telehealth will promote comprehensive care in all settings, even remote practices from the physician who leads the medical home.

Principle 5. *Emphasis on quality and safety.*

Training programs should ensure that providers are familiar with ways that the PCM-DH can facilitate the delivery of safe, cost-effective, high-quality care. The most effective ways that the PCM-DH can accomplish this need is for it to be a key focus of the work and education supported by Title VII, section 747. When effective models are developed, this program needs to play a central role in promoting their dissemination and adoption.

Principle 6. *Enhanced access to care through systems such as open scheduling, expanded hours, and new options for communication between patients, their personal physician, and practice staff.*

The importance of continuity of care and ways to help patients and their families learn to use the PCM-DH as the focus of their care must be a component of training. Innovative medical-dental home models that provide off-hour access to team members and urgent care capacity are more likely to provide higher quality, integrated care. Approaches to use the PCM-DH team effectively, however, must alleviate the current untenable demands on primary care clinicians.

Principle 7. *Payment appropriately recognizes the added value of the PCM-DH for patients and society as a whole.*

Clinicians need training in cost-effective delivery of care within the PCM-DH. We need to develop effective means for communicating costs of care to providers and patients and workable approaches to maximize the cost-effectiveness of care within the PCM-DH. Fundamental changes in payment to providers in the PCM-DH must be implemented. Payment for billing for face-to-face services will not support the PCM-DH and its broad components, including team-based care, e-communications, patient education, and increased accessibility. Quality improvement initiatives also

require efforts outside of face-to-face time with the patient. Finally, the gap between primary care and specialist compensation must shrink in order to make practicing in the PCM-DH an attractive and satisfying opportunity.

Title VII, section 747 is charged with promoting training of primary care clinicians. To accomplish the goal of training in the PCM-DH, up-front funding is necessary to develop the infrastructure for this model of care (6th recommendation). Then funding must support curriculum development and training of clinician-educator and clinician-research leaders to implement the PCM-DH in diverse academic and community based settings (2nd, 3rd, and 4th recommendation). Finally, CME and CDE programs to retrain providers must be supported to help them transition to the PCM-DH model of care (7th recommendation).

THE IMPORTANCE OF TITLE VII, SECTION 747 TO PRIMARY CARE TRAINING RELATED TO THE MEDICAL-DENTAL HOME

The Importance of Title VII, Section 747 Programs

In its 18th report, the Council on Graduate Medical Education (COGME, 2007a) concluded that recent funding reductions in Title VII threatened the ability of U.S. medical training programs to produce a sufficient cohort of primary care providers. The Council recommended increased Federal funding to these programs to improve access to care in medically underserved areas. In the subsequent report, the Council reiterated its recommendation for increased support for Title VII, this time emphasizing the critical role of Title VII in providing new training venues to educate physicians in patient-centered care, population health, information technology, continuous transitions in care, quality assessment, and health care for vulnerable populations (COGME, 2007b).

As suggested by COGME's recent recommendations, Title VII, section 747 programs are at the forefront of meeting the training needs and skill competencies of our primary care workforce. Along with the Title VIII program, Title VII, section 747 programs train the clinicians who will provide care in the PCM-DH: family physicians, general internists, general pediatricians, geriatricians, PAs, NPs, and general and pediatric dentists. Additionally, Title VII, section 747 supported

programs focus on often-neglected skills necessary to reduce health disparities, improve cultural competency, facilitate multidisciplinary care, and implement evidence-based medicine.

Beyond training, Title VII, section 747 programs are also well positioned to help define, and refine, this new model of care while the PCM-DH is in its early stages of development. Current models experience challenges regarding care for different populations. Innovations in the PCM-DH have the potential to determine best practices and optimal systems of care for vulnerable and minority populations. Title VII, section 747 grants also support Academic Health Centers, which serve as critical safety net providers in underserved areas.

The other central component of the successful growth of the PCM-DH model is ensuring the capacity of leaders today to teach and train the leaders of tomorrow. Historically, Title VII, section 747 has supported programs that encourage and develop academic leaders in primary care. Title VII, section 747 programs, as key facilitators of faculty development, are in position to guide training of educators to promote the skills that future medical and dental providers need to effectively operate within the medical-dental home environment. Our recommendations all address the key role that Title VII, section 747 must have in a changing health care environment that focuses increasingly on primary care in a well-supported PCM-DH.

The Value of Title VII, Section 747 Programs

Title VII, section 747 has been slated repeatedly for oblivion, with its budget eliminated. From \$ 93 million in FY 2002, appropriations for these programs fell precipitously to \$ 40.8 million in FY 2006. There have been minimal increases to \$47.9 million in FY 2008. Part of this mistaken effort to eliminate the program relates to a poor understanding of its mission and a failure to measure its outcomes appropriately. The Office of Management and Budget (OMB) had trouble finding direct outcomes of program activities but wanted to see, for example, that the program could produce more primary care clinicians. For all the reasons noted in this report, the disappearing supply of primary care clinicians can be attributed to larger forces outside of this program's control. To address OMB concerns, the ACTPCMD 5th Report (2005) developed a logic model roadmap establishing targeted outcomes to measure the impact of Title VII, section 747 program activities, both direct and along with other HRSA programs (i.e., Na-

tional Health Service Corps (NHSC), the Health Careers Opportunity Program, and the Area Health Education Centers). Additionally, numerous external reports and studies have recently reviewed Title VII, section 747 programs and documented some of the positive results from these programs. These findings include:

- Physicians in programs funded by Title VII in medical school and residency are more likely to practice in rural areas and low-income areas (Krist, Johnson, Callahan, Woolf, & Marsland, 2005) as well as shortage areas for primary care health professions (Fryer et al., 2002).
- PAs who graduate from programs funded by Title VII are more likely to be from underrepresented minority backgrounds (American Academy of Physician Assistants [AAPA], 2008).
- Title VII programs are associated with more PAs working in rural health clinics (AAPA, 2008). This finding is particularly important to non-physician clinicians in rural Community Health Centers (CHCs) who serve a key role in increasing the supply of providers (Rosenblatt, Andrilla, Curtin, & Hart, 2006).
- Title VII funding has established new dental residency programs that produce graduates who are more likely to practice in underserved communities (Academy of General Dentistry [AGD], 2007).
- Over the past decade, Title VII support has substantially increased residency positions in pediatric dentistry, and many of the graduates practice in clinics serving low-income populations (AGD, 2007). Title VII funding is associated with more pediatric dentists treating the underserved and with recruitment of underrepresented minority dentists (Edelstein, Krol, Ingargiola, & De Biasi, 2003).
- Title VII funding is associated with institutions that focus on serving minority and at-risk populations (Edwards, Wilson, Behringer, Smith, & Blackwelder, 2006).
- Graduates of schools with Title VII faculty development grants are significantly more likely to choose careers in academic family medicine (Fryer, Meyers, Krol, Phillips, Green, Dovey, et al, 2002)
- Title VII funding is associated with more family physicians working in medically underserved communities (Forrest, 2006).
- Exposure to programs funded by Title VII is associated with greater staffing of CHCs (American Academy of Family Physicians [AAFP], 2006).
- Programs funded by Title VII have spurred the development of innovative programs that have been adopted by medical schools, including community-oriented primary care curricula and clinical experiences with underserved populations (Freeman & Krause, 2006).

Further, Title VII, section 747 programs have provided critical “synergistic” support to the documented success of other Federal programs. Examples include the successes of programs such as the NHSC and CHCs in recruiting and retaining primary care providers who locate and stay in practice in underserved areas (Krist, Johnson, Callahan, Woolf, & Marsland, 2005; Forrest, 2006; Rosenblatt, Andrilla, Curtin, & Hart, 2006). According to the AAFP, nearly 4,000 family and primary care physicians in programs supported by the Title VII funding as medical students have opted to work in a CHC. Without such funding, projections indicate that the CHCs would have twice as many vacancies as they do now (AAFP, 2006). Recent updates in this analysis demonstrate that, without this program, the staffing for the Nation’s CHCs would be decimated (Rittenhouse, Fryer, Phillips, Miyoshi, Nielsen, Goodman, et al. 2008).

Skeptics of the key role of Title VII, section 747 program should review the entire issue of *Academic Medicine* in November 2008 (History of the Title VII Section 747 Grant Programs, 1963-2008, and Their Impact) which has been dedicated to demonstrating the value of the Title VII, Section 747 program (Reynolds, P.P, 2008). This extensive compendium of evidence reinforces the need to support this program fully because it has been highly successful despite continual funding cuts. The Advisory Committee also recognizes that Title VII, section 747 must be linked to other important Federal initiatives to advance primary care. We recommend that a comprehensive review by a respected external body, such as the Institute of Medicine, examine all aspects of training and the clinical environment to revitalize primary care through the PCM-DH and other initiatives. Such a report would be of great benefit to the Secretary of Health and Human Services in building broad consensus for future policy and program decisions (9th recommendation).

SUMMARY

The Advisory Committee finds that the PCM-DH model holds great promise to reduce health disparities, improve continuity of care, reduce costs, and increase quality/safety of care. Our current model of medical and dental education produces inadequate numbers of primary care providers and certainly does not prepare clinicians to practice in a PCM-DH environment. The Committee believes that Title VII, section 747 is the appropriate Federal program to provide critical training opportunities to prepare the leaders who will direct educational and research programs focusing on the PCM-DH. The Committee also believes that Title VII, section 747 authority needs to be expanded to include initiatives to train practicing primary care clinicians to deliver care in a PCM-DH (7th recommendation). But these additional tasks must not compromise current Title VII, Section 747 programs that are already insufficiently funded. Therefore, our first recommendation is to restore the decimated funding of HRSA's ongoing primary care training programs.

The Advisory Committee notes that, while Title VII, section 747 can take the lead in some aspects of education and training, many areas central to the de-

velopment of the PCM-DH will not be remedied by the Title VII, section 747 training programs. For example, Title VII, section 747 alone cannot change the flawed distribution of ambulatory versus inpatient training of physicians. In recent years, most of the small number of general internists who pursue a career in primary care have elected to become hospitalists because they are far more comfortable with acute inpatient care when they finish training. In addition, the hospitalist career path offers a higher income and a more controlled lifestyle than outpatient practice. The focus on specialization and inpatient care in our health care system reflects years of policies that have neglected ambulatory, prevention-oriented care.

In conclusion, the Advisory Committee believes that failure to invest in the PCM-DH will compromise the health of the public and condemn the U.S. to continually skyrocketing health care expenditures. Our Nation faces a watershed moment when it can restructure health care to focus on prevention and coordinated comprehensive care through the adoption of this promising new model of care. Title VII, section 747 must assume a leadership role in this initiative through its primary care training programs.

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