

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

*PREPARING PRIMARY HEALTHCARE
PROVIDERS TO MEET AMERICA'S
FUTURE HEALTHCARE NEEDS:*

**THE CRITICAL ROLE OF
TITLE VII, SECTION 747**

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

November 2004



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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 U.S. Government.

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ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

Section 748 [293z] of the Health Professions Education Partnership 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 section 747 and
- 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 healthcare 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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ABSTRACT

The United States is in the midst of a National healthcare crisis that is expected to intensify rapidly over the coming years. The aging of the population, increasing chronic care conditions, escalating costs of care, and an increasingly diverse patient population are expected to impact patient access, health disparities, and quality of care. The current educational environment for primary care providers will not adequately prepare them for these rapidly changing and emerging needs. New educational strategies must be fostered to increase the competencies of our Nation's primary care providers.

The education and training of primary care providers are an integral part of preparing our country to meet the health needs of the future (Showstack, Rothman, et al., 2004; Institute of Medicine, 2002a; Starfield, 1998). A well-prepared, effective primary care workforce reduces healthcare costs and increases the quality of care for all patients (Starfield and Shi, 2002; Institute of Medicine, 2001).

Primary care professional organizations across the board have recently evaluated the future needs of their disciplines and have made recommendations for action. Three common themes have emerged from these evaluations. Primary care providers must (1) increase their use of information technology as a tool for the following: storing patient data, communicating with patients and providers, coordinating and assuring quality care, and educating patients and communities; (2) increase interdisciplinary team care with a focus on chronic disease management, patient safety, and quality care; and (3) provide patient-centered, community-oriented care in the context of patients' personal background and that of the community, with particular attention to emerging population health threats.

Title VII, section 747's innovative education and training programs are uniquely positioned to prepare our Nation's primary care providers to meet these future needs. Health Resources and Services Administration's (HRSA's) Bureau of Health Professions administers these grant programs. No other Federal vehicle exists to create such structural changes in the education of our Nation's primary care providers.

CONCLUSION

The Advisory Committee's deliberations over the past year have led to the central conclusion that Title VII, section 747 is the most appropriate vehicle to guide the content and capacity of primary care education and training in the United States to meet the healthcare needs of the future.

RECOMMENDATIONS

1. To prepare future primary healthcare providers with the training to meet the emerging challenges to the health of the public adequately, Title VII, section 747 grant programs require expanded financial resources. Specifically, Title VII, section 747 programs require a budget, at a minimum, of \$198 million to provide adequate funding to meet these critical healthcare needs.
2. Title VII, section 747 training programs should develop and disseminate educational innovations in the use of information technology for quality care, prevention of medical errors, evidence-based practice, and patient and provider communication.
3. Title VII, section 747 funding should support primary care medical and dental training programs that utilize integrated interdisciplinary team models and innovative healthcare designs.
4. Title VII, section 747 funding should support primary care medical and dental faculty development programs that incorporate concepts and skills related to interdisciplinary practice models and innovative healthcare designs.
5. Title VII, section 747-funded programs should ensure future primary care providers have the knowledge, skills, and competencies to deliver culturally effective and community-oriented care.
6. Title VII, section 747 programs should develop and support primary care educational infrastructures that focus on community collaboration and outreach.

7. Title VII, section 747 programs should develop innovative educational strategies that address emerging population needs and scientific advances, such as patient safety, prevention, chronic disease management, elimination of health disparities, genomics, and first response strategies to public health hazards.

EXECUTIVE SUMMARY

INTRODUCTION

The United States is in the midst of a National healthcare crisis that is expected to intensify rapidly over the coming years. The aging of the population, increasing chronic care conditions, escalating costs of care, and an increasingly diverse patient population are expected to affect patient access, health disparities, and quality of care. The current educational environment for primary care providers will not adequately prepare them for these rapidly changing and emerging needs. New educational strategies must be fostered to increase the competencies of our Nation's current and future primary care providers.

At the same time, the President has made it a priority to add to and expand substantially the number of community health centers across the United States to help meet the needs of the underserved. The President has also expanded the National Health Service Corps and other Federal student loan repayment and scholarship programs to help meet the staffing needs for these centers. However, without appropriate provider education and preparation, increased staffing alone will be insufficient to meet increasing service goals. Such an expansion in community health workers requires a corresponding expansion in training to prepare these workers to meet the unique needs of this patient population.

The education and training of primary care providers are an integral part of preparing our country to meet the health needs of the future (Showstack, Rothman, et al., 2004; Institute of Medicine, 2002a; Starfield, 1998). A well-prepared, effective primary care workforce reduces healthcare costs and increases the quality of care for all patients (Starfield and Shi, 2002; Institute of Medicine, 2001).

Primary care professional organizations across the board have recently evaluated the future needs of their disciplines and have made recommendations for action. Three common themes have emerged from these evaluations. Primary care providers must (1) increase their use of information technology as a tool for the following: storing patient data, communicating with patients and providers, coordinating and assuring quality

care, and educating patients and communities; (2) increase interdisciplinary team care with a focus on chronic disease management, patient safety, and quality care; and (3) provide patient-centered, community-oriented care in the context of patients' personal background and that of the community, with particular attention to emerging population health threats.

Title VII, section 747's innovative education and training programs are uniquely positioned to prepare our Nation's primary care providers to meet these future needs and to address emerging issues as identified in *Healthy People 2010*. The Health Resources and Services Administration's (HRSA's) Bureau of Health Professions (BHP) administers these grant programs. No other Federal vehicle exists to create such structural changes in the education of our Nation's primary care providers.

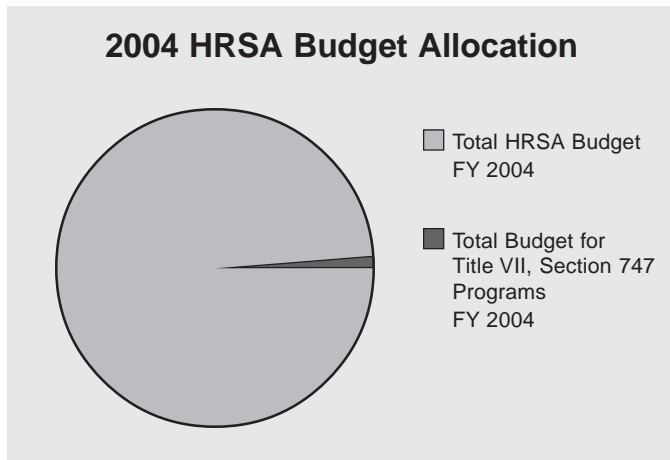
PURPOSE OF THE REPORT

The purpose of this fourth report is to emphasize the important role of Title VII, section 747 programs in helping to guide the training and education of primary care providers to meet the future needs of the U.S. population. First, this report highlights the accomplishments of Title VII, section 747 programs. Second, it describes the importance of primary care providers, the challenges in the primary care environment, and the future needs of the disciplines. Third, it outlines common themes among the disciplines and suggests the future role of Title VII, section 747 programs in training primary care providers to meet these needs. The report concludes with a specific set of recommendations that address how Title VII, section 747 programs can help prepare providers to meet the needs of a rapidly changing healthcare environment.

TITLE VII, SECTION 747 ACCOMPLISHMENTS

Title VII, section 747 programs help establish innovative delivery systems that have become models for care throughout the Nation. Title VII, section 747 programs have helped to develop and expand training

programs and foster curricular changes for primary care providers to promote diversity in the workforce, to ensure that health professions curricula respond to the changing and emerging needs of the population, and to improve the Nation's health by assuring equitable access to a high-quality healthcare workforce. With just a 1 percent share of the HRSA budget, Title VII, section 747 programs have achieved remarkable success (see chart below).



For example, Title VII, section 747 funding has produced the following outcomes.

Providing Service to the Underserved

Primary care graduates of Title VII, section 747 programs are two to four times more likely than other graduates to serve minority and disadvantaged populations by practicing in medically underserved communities (U.S. Department of Health and Human Services, 2001; Calman, 1991). According to a recent study by the Robert Graham Center, Title VII funding of family medicine programs has had a significant influence in the expansion of the primary care physician workforce and increased physician accessibility for people in rural and underserved communities (Freyer, Meyers, et al., 2002).

Increasing the Number of Minority and Disadvantaged Providers

Programs funded under Title VII, section 747 have significantly increased the number of underrepresented minority enrollees, graduates, and faculty in healthcare education. Title VII, section 747-supported programs graduate four to seven times more minority and disadvantaged students than other programs. ***These programs support, on average, the development of over 10,000 underrepresented minority graduates, residents,***

and faculty each year (U.S. Department of Health and Human Services, 2001).

Developing Primary Care Providers

Title VII, section 747 has been instrumental in encouraging the development of a primary care workforce. In the past 3 years, Title VII, section 747 programs have provided support to 21 of the top 25 primary care-producing schools (Association of American Medical Colleges, 2003).

Preparing Providers to Meet Priority Healthcare Needs

Title VII, section 747 grant programs have been instrumental in preparing providers to meet priority healthcare needs. Over the past 3 years, Title VII, section 747 grant programs have focused on and supported each of the ten *Healthy People 2010* Leading Health Indicators: Priorities for Action to increase quality and years of life and to eliminate health disparities (see table on page xi). Title VII, section 747 programs have also supported other critical areas, such as oral health, a *Healthy People 2010* Focus Area.

THE IMPORTANCE OF PRIMARY CARE

Primary care providers are critical in ensuring the health of all Americans. The ability of these providers to reach populations before illness onset and to provide early treatment is essential in reducing healthcare costs and enhancing the quality of care. More than three-quarters of U.S. adults indicate that there is one physician whom they consider to be their primary care physician (Safran, 2003). This rate has remained remarkably stable over the past several decades, despite substantial changes in the U.S. healthcare delivery system. Moreover, despite changes in the marketplace, these relationships tend to endure for years (Safran, 2003). These providers serve as the cornerstone for ensuring continuity of care throughout a patient's life.

CHALLENGES IN THE PRIMARY CARE MEDICINE AND DENTISTRY ENVIRONMENT

There have been extraordinary changes over the past 20 years in the healthcare environment, and the Nation is expected to face even greater changes over

HEALTHY PEOPLE 2010 LEADING HEALTH INDICATOR	Title VII, Section 747 Grants 2001	Title VII, Section 747 Grants 2002	Title VII, Section 747 Grants 2003	Number of Grants in Priority Area (over 3 years)	Percentage of Total Grants (over 3 years)¹
Overweight and Obesity²	53	80	132	265	26.7
Substance Abuse³	159	131	186	476	47.9
Responsible Sexual Behavior⁴	N/A	N/A	79	79	23.2
Mental Health⁵	74	112	102	288	29.0
Injury and Violence⁶	62	104	114	280	28.2
Access to Care – <i>Minority Health</i>⁷	212	196	263	671	67.5
Access to Care – <i>Underserved</i>⁸	245	217	278	740	74.4
Access to Care – <i>Provider Connectivity</i>⁹	95	105	112	312	31.4
Access to Care – <i>Community-Based Initiatives</i>¹⁰	140	214	188	542	54.5
Oral Health¹¹	N/A	65	73	138	20.4

¹ Percentage calculated by dividing the number of grants across the years that the activity was a special priority area by the total grants across those years. There were 316 grants for FY 2001, 338 grants for FY 2002, and 340 grants for FY 2003, for a total of 994 grants for all 3 years.

² Title VII, section 747 grant priority areas: Obesity and Nutrition.

³ Title VII, section 747 grant priority areas: Behavioral Health and Substance Abuse.

⁴ Title VII, section 747 grant priority area: Sexually Transmitted Diseases.

⁵ Title VII, section 747 grant priority areas: Mental Health Issues.

⁶ Title VII, section 747 grant priority area: Domestic Violence.

⁷ Title VII, section 747 grant priority areas: African American, American Indian/Alaska Native, American Indian/Alaska Native Initiatives, Hispanic Initiatives, Minority Health Issues, Minority Recruitment/Retention, and Cultural Competence.

⁸ Title VII, section 747 grant priority areas: Border Health Activities, Clinical Training in Sites Serving Underserved Areas, Community Health Centers, Governor-Designated Areas, Health Professions Shortage Areas, Home Health, Homeless Issues, Migrant Health Issues, Rural Health, Rural Health Clinics, Urban Health, and Home Health.

⁹ Title VII, section 747 grant priority areas: Telemedicine/Telehealth and Distance Learning.

¹⁰ Title VII, section 747 grant priority areas: Community-Based Continuity of Care Experiences and Health Departments.

¹¹ Title VII, section 747 grant priority area: Oral Health Initiatives. Oral Health is a *Healthy People 2010* Focus Area.

the coming decades. The major components of these changes are outlined below.

Aging Population

Census projections show the Nation's population will grow 18 percent between 2000 and 2020. However, the number of persons aged 65 and older is expected to grow 54 percent in this same time period (U.S. Census Bureau, 2000). By 2020, almost 40 percent of a physician's time will be spent treating the aging population (U.S. Department of Health and Human Services, 2004c).

Racial and Ethnic Diversity

Demand for healthcare services by minorities is expected to increase as the percentage of minorities in the U.S. population grows (U.S. Department of Health and Human Services, 2004c). Minorities are expected

to compose 46 percent of the total population by the year 2050 (U.S. Census Bureau, 2000).

Increased Need for Chronic Disease Management

The aging population will likely increase the prevalence of chronic conditions (Horvath, 2003). Approximately 125 million Americans are currently living with a chronic condition; two-thirds of them are over the age of 65. Many have multiple conditions (Johns Hopkins University, 2002). Additionally, because of medical and technological advances, many younger people are now surviving conditions or injuries that were previously fatal, thereby increasing the prevalence of chronic diseases and disabilities in the younger population. Primary care providers are expected to be at the forefront of managing chronic diseases, providing comprehensive and coordinated long-term care.

Increased Emphasis on Eliminating Disparities in Quality of Care

Research has shown that racial and ethnic minorities receive lower quality healthcare, even when factors including insurance, income, age, and education are accounted for (Institute of Medicine, 2002a). The education and training of diverse, culturally competent healthcare providers is, and will be, critical to addressing disparities in care (Advisory Committee on Training in Primary Care Medicine and Dentistry, 2003). Evidence indicates that increasing the cultural competency and diversity of healthcare providers has a positive impact on the care that racial and ethnic minorities receive, increasing patient choice and patient satisfaction (Institute of Medicine, 2004). Similarly, providers need to receive training to meet the needs of persons with mental retardation and other populations at risk adequately (U.S. Department of Health and Human Services, 2002).

Costs of Care

The cost of healthcare services continues to rise, with Americans having spent a total of \$1.4 trillion in 2001. Estimates project that this spending will increase to \$3.1 trillion by 2012 (Kaiser Family Foundation, 2004). Containing costs will involve “reducing errors, eliminating waste and duplication in clinical care, modernizing and streamlining administration, promoting transparency and accountability for performance and aligning financial incentives for physicians, hospitals, and other healthcare providers to reward high quality and efficient care” (Davis, 2003).

Financial Access to Care

According to most recent estimates, over 43 million Americans lack health insurance coverage. Studies have repeatedly shown that uninsured individuals are more likely to delay or postpone getting healthcare (Kaiser Family Foundation, 2003). Further, over 180 million people do not have dental insurance (Mertz and O’Neil, 2002). A lack of dental insurance is a major impediment to getting oral healthcare. Because of rising healthcare costs, and the decline in employer-based healthcare coverage, the number of uninsured or underinsured is expected to continue to increase over the coming years (Kaiser Family Foundation, 2003).

Supply of Primary Care Providers and Faculty

Studies indicate that the current supply of medical providers will not be sufficient to meet the future demand for

primary care (Biola, Green, et al., 2003a; Newton and Grayson, 2003). Factors affecting the supply of primary care providers include the National shortage of medical students interested in primary care, skyrocketing tuition rates and related student debt burdens, exorbitant malpractice premiums, legal liability issues, and under-reimbursement for primary care services (Biola, Green, et al., 2003b). In terms of primary care medicine, more post-graduates elect to pursue medical specialties as opposed to primary care, which is viewed as too broad, with high patient loads, less controllable lifestyles, and often increasingly stressful practice settings (Urbina, Solan, et al., 2003).

In addition, there will be a decline in the supply of dental providers to meet the future demand for dental services (Douglass, 2003). The projected number of active dentists in 2020 is expected to drop 23 percent, from a high in 1987 (American Dental Education Association, 2002). Further, the American Academy of Pediatric Dentistry conducted a 3-year study that concluded that there is an acute shortage of pediatric dentists to meet identified societal needs (Davis, 2000). The escalating U.S. population, the aging of the population, the maldistribution of dentists, and a geographic disparity of oral healthcare providers all contribute to the problem of difficult access to dental care for those in need (Douglass and Watson, 2002; Douglass, 2003; American Dental Education Association, 2002). In fact, the areas designated by HRSA as dental professional shortage areas have grown from 700 in 1993 to over 1,800 in 2002 (Hadley and Holahan, 2003). The shortage of dentists to care for an increasingly aging and diverse population means that people will have less access, particularly if Title VII programs are underfunded or neglected.

Emphasis on Underserved Areas

There is currently an insufficient number of providers in underserved rural and urban areas, and existing providers who are there are insufficiently prepared (Basco, Buchbinder, et al., 1999). The President’s Health Center Expansion Initiative will expand or create 1,200 new health centers in underserved areas in the United States (Thompson, 2002). Initiatives such as these will require that there be a steady supply of well-prepared, culturally competent primary care providers willing to work in these areas.

Information Technology

The potential for overall care integration through electronic medical records, electronic communication, and electronic prescribing has the potential to decrease the risk of medical errors and to increase overall quality

of care. However, barriers to widespread use of information technology have been documented, such as software incompatibility, patient privacy concerns, and time and cost issues. Primary care providers will need to be trained to ensure their capabilities to both effectively use the new technologies and integrate their use into practice.

Increased Emphasis on Quality of Care and Patient Safety

Between 44,000 and 98,000 persons die in U.S. hospitals each year as a result of medical errors (Institute of Medicine, 1999). Although more attention has been focused on patient safety in the hospital setting, increasingly the focus has shifted to primary care providers as key to ensuring the safety of their patients. When patients see multiple providers in different settings, and the provider does not have access to complete information, the likelihood for errors increases. The training of primary care providers as leaders in the coordination of care is essential in increasing the quality of care and in reducing medical errors.

FUTURE NEEDS OF PRIMARY CARE DISCIPLINES

The primary care workforce comprises many allopathic and osteopathic medical and dental disciplines. Each of the primary care disciplines has recently completed an evaluation directed at determining the future needs of its providers. These groups reviewed the anticipated demands of the future and made recommendations for needed changes within their disciplines. The overarching theme of each report was focused on ensuring and enhancing the quality of patient care. Key recommendations are outlined below.

Family Medicine

The *Future of Family Medicine Project* conducted a National study in 2002. Interviews and focus groups identified key issues for diverse constituencies, including patients, payers, residents, students, family physicians, and other clinicians. Subsequently, interviews were conducted with Nationally representative samples of nine key constituencies. A Project Leadership Committee synthesized the information. The resultant report recommended that allopathic and osteopathic family medicine encourage the use of technology, enhance communication practices, focus on education at all levels, place further emphasis on patient safety and quality of care, and increase interdisciplinary collaborations in patient care (Future of Family Medicine Project, 2004).

General Internal Medicine

The Society of General Internal Medicine set up a task force to address the future issues because of the changing practice environment (Task Force on the Domain of General Internal Medicine, 2003). The task force recommended that general internists utilize new technologies; enhance communication skills; focus on the utilization of interdisciplinary teams and collaborative team efforts; and train faculty in skills related to care delivery, practice management, information systems, and interdisciplinary team building and leadership (Task Force on the Domain of General Internal Medicine, 2003).

Osteopathic Medicine

Traditionally, a high percentage of doctors of osteopathy (DOs) has chosen to practice primary care medicine relative to allopathic physicians (American Osteopathic Association [AOA], 2004). Currently, 65 percent of practicing DOs are in the primary care specialties of family medicine, general internal medicine, or general pediatrics. Recent data show that increasing numbers of senior osteopathic medical students are applying to residency through the National Resident Matching Program (NRMP); of the NRMP applicants from the 2003 class of senior osteopathic medical students, only 30 percent showed an intention of going into primary care (National Resident Matching Program, 2004). However, less than half (45 percent) of osteopathic senior students enter residency through the NRMP. Of the other 55 percent who participate in the AOA Intern/Resident Registration Program, approximately 91 percent entered into a primary care program (Obradovic and Winslow-Falbo, 2003). Thus, it is unclear at this point whether there is any discernible movement of DOs away from primary care medicine.

Pediatrics

Recently, National organizations representing the pediatric community commissioned the *Future of Pediatric Education II (FOPE II)*, a collaborative project of the pediatric community, to review the impact of changes on pediatric medicine (Simon, Chesney, et al., 2003). The resultant report recommended that allopathic and osteopathic pediatricians focus on interdisciplinary team approaches, increase interactions with pediatric subspecialties, increase diversity and foster cultural competency, address child health in the context of family and community, emphasize the use of new technologies, and update knowledge of new treatments for diseases and new models of comprehensive care (Simon, Chesney, et al., 2003).

Physician Assistants

The American Academy of Physician Assistants (AAPA) undertook the development of a physician assistant strategic plan to meet the needs of the future (American Academy of Physician Assistants, 1999). The report entitled *Into the Future: Physicians Assistants Look into the 21st Century* recommended an increased emphasis on diversity and training in cultural competency, increased use of technology, an emphasis on expanded clinical expertise (while being cognizant of the limits of physician assistants' clinical knowledge), education of patients, development of educational partnerships with physicians and other professionals, and the expansion of interdisciplinary training and practice (American Academy of Physician Assistants, 1999).

General and Pediatric Dentistry

The American Dental Association (ADA, 2002), the American Dental Education Association (ADEA, 2002), the American Academy of Pediatric Dentistry (AAPD, 2001), and the Institute of Medicine (IOM, 1995) have all addressed the future needs of the dental community. The reports found that dentists need to take a number of actions to meet the changing needs of the healthcare system. The reports concluded that dentists should increase student exposure to underserved areas and populations, increase diversity and cultural competency, utilize interdisciplinary approaches to create a link between oral health and overall health, enhance communication and collaboration with patients, utilize new technologies, and emphasize community practice and public health (American Dental Education Association, 2002; Haden, Catalanotto, et al., 2003). In addition, the American Academy of Pediatric Dentistry conducted a 3-year study resulting in a white paper. The study concluded that there is an acute shortage of pediatric dentists to meet identified infant and child oral healthcare needs (Davis, 2000).

COMMON THEMES IN PRIMARY CARE MEDICINE AND DENTISTRY DISCIPLINES

Several common themes emerged from the recommendations of the specific primary care disciplines. These themes centered on the need for primary care providers to:

- **Increase their use of information technology** as a tool for the following: storing patient data, com-

municating with patients and providers, aiding evidence-based practice, coordinating and assuring quality care, and educating patients and communities.

- **Increase interdisciplinary team care**, maintain chronic disease management, patient safety, and quality care.
- **Provide patient-centered, community-oriented care** in the context of patients' personal background and that of the community, with particular attention to emerging population health threats.

Information technology has the potential to transform the work of primary care providers. The potential for overall care integration through the use of electronic medical records and electronic communication from provider-to-provider and provider-to-patient significantly reduces the likelihood of medical errors and prevents quality failures. Information technology also allows providers quick access to reliable information on the Internet as well as through personal digital assistants (PDAs) and pocket personal computers. However, providers need to be educated in the use of these new technologies and to be able to integrate their use into practice.

Interdisciplinary teams have been shown to reduce errors significantly, increase patient safety, and enhance quality of care (Institute of Medicine, 1999). The primary care provider is the natural cornerstone of this collaborative treatment process. However, providers need to be educated in leadership, communication, organizational management, and team building, as integrated team care necessitates that providers acquire new skills and adopt new ways of interacting with each other.

It is critical that primary care practice move from the office into the communities that they serve. Primary care providers of the future will need substantial skills to provide community responsive care. They will need to communicate effectively, to provide culturally effective care to various diverse communities, and to interact competently with public health and policy-making bodies.

Further, primary care providers are on the front line responding to emergencies and ongoing public health challenges (Advisory Committee on Training in Primary Care Medicine and Dentistry, 2002). The threat to entire populations from environmental challenges to potential biological threats of terror have only heightened the need for these providers.

THE FUTURE ROLE OF TITLE VII, SECTION 747 IN PRIMARY CARE MEDICINE AND DENTISTRY

The trend toward increasing the quality of the Nation's healthcare is unmistakable. In the landmark *Crossing the Chasm, A New Health System for the 21st Century* report (Institute of Medicine, 2001), the IOM defined the framework for the healthcare system of the 21st century as **safe, effective, patient centered, timely, efficient, and equitable**.

Title VII, section 747 programs are uniquely positioned to help build new educational curricula to prepare future primary care providers to adapt to the changing needs of the population. Title VII, section 747 programs can provide key support in training faculty and students in how information technology innovations can change practice and enhance the efficiency and quality of care. Title VII, section 747 programs can also provide the critical support needed to train faculty and students in the use of interdisciplinary team care models to improve quality of care. Further, Title VII, section 747 programs are critical in building and supporting infrastructures for programs that focus on community collaborations and outreach. No other Federal vehicle exists to create such structural changes in the education of our Nation's primary care providers.

CONCLUSION

Title VII, section 747 is the major vehicle for influencing the content and capacity of primary education and training in the United States. As such, it will be critical in revitalizing the training programs for primary care providers to recognize the varying skills they will need to care for their patients in the future. In support of the goals of HRSA and BHPPr, the Advisory Committee makes the following recommendations.

RECOMMENDATIONS

- 1. To prepare future primary healthcare providers with the training to meet the emerging challenges to the health of the public adequately, Title VII, section 747 grant programs require expanded financial resources. Specifically, Title VII, section 747 programs require a budget, at a minimum, of \$198 million to provide adequate funding to meet these critical healthcare needs.** Primary care providers play a critical role in the rapidly changing healthcare environment. The

challenges to healthcare include demographic changes in the population, increased prevalence of chronic conditions, decreased access to care, a need for effective coordinated first response strategies, and a need for information technology to manage the rapid growth of medical information required to provide quality and effective healthcare services. Additional funding is essential to prepare current and future primary care providers to utilize healthcare information technology, to manage and interact in interdisciplinary teams, and to provide community-based care to meet the demands of a healthcare system undergoing remarkable transformation.

The President has made it a priority to add to and expand substantially the number of community health centers across the United States. The President has also expanded the National Health Service Corps and other Federal student loan repayment and scholarship programs to help meet the staffing needs for these centers. However, without appropriate provider education and preparation, increased staffing alone will be insufficient to meet these increasing service goals. Specifically, Title VII, section 747 programs provide the critical means for training and successful placement, practice, and retention of health professionals at these sites. Such an expansion in community health workers will require a corresponding expansion in appropriate training to prepare them to meet the critical care needs of their patient population.

- 2. Title VII, section 747 training programs should develop and disseminate educational innovations in the use of information technology for quality care, prevention of medical errors, evidence-based practice, and patient and provider communication.** Title VII, Section 747 should encourage the development of training programs focused on increasing provider communication, evidence-based practice, and quality of care. Title VII, section 747 goals include the following:
 - Develop programs and curricula to train medical and dental faculty in leadership skills as well as to provide training in emerging technologies. Faculty should teach both technical and leadership skills with regard to the use of technologies. The emphasis should be on the potential of new technologies to increase patient- and provider-centered communication and to assure quality of care.

- Develop training programs for state-of-the-art information technology-based systems. Pertinent technologies should include clinical e-mail, knowledge-based systems, and electronic medical records.
 - Support programs designed to teach the use of information technology for quality measurement and evidence-based practice. Such programs should specifically address technological tools that facilitate continuing education and decision support to aid solo practitioners, rural practitioners, and others in isolated practice locations.
 - Encourage training in the use of information technology to enhance communication among providers, particularly those in solo practices, rural practices, and other medically underserved areas. This training should emphasize the use of electronic medical records to integrate information among multiple providers.
 - Encourage training in the use of applications to increase and enhance communication across healthcare disciplines and among providers of care. Such training should emphasize the use of such technologies to decrease medical errors and increase quality and safety of care.
 - Encourage training in applications that enhance communication with patients and that support patient self-care. Such training should include efforts to use technology to enhance communication with those in greatest need, thereby decreasing the “digital divide.”
- 3. Title VII, section 747 funding should support primary care medical and dental training programs that utilize integrated interdisciplinary team models and innovative healthcare designs.** Title VII, section 747 should encourage the development of interdisciplinary models and training in integrative settings, including:
- Chronic care models providing interdisciplinary, patient-focused, approaches to care for patients with complex and chronic diseases or conditions.
 - Quality improvement teams that work together across disciplines to identify opportunities to improve access to care, enhance quality of care, and reduce medical errors.
 - Community and population health models that assist providers in sharing information across a broad network for surveillance and early warning of emergency syndromes or emerging threats.
 - Collaborations and interdisciplinary partnerships between medical and dental providers.
- 4. Title VII, section 747 funding should support primary care medical and dental faculty development programs that incorporate concepts and skills related to interdisciplinary practice models and innovative healthcare designs.** Title VII, section 747 should support faculty preparation in interdisciplinary practice models through didactic training and experience in settings using these models. Interdisciplinary models supported by faculty should be evidence-based, guided by best practices and outcomes.
- 5. Title VII, section 747 funded programs should ensure future primary care providers have the knowledge, skills, and competencies to deliver culturally effective and community-oriented care.** Title VII, section 747 programs should encourage the development of programs in cultural competency and community-oriented care as a required, integrated component of the training and professional development of healthcare providers. Title VII, section 747 should encourage the development of programs that provide preparation that reaches beyond the classroom to include such experiential learning as training and placement in community settings and active interaction with community groups and associations.
- 6. Title VII, section 747 programs should develop and support primary care educational infrastructures that focus on community collaboration and outreach.** Title VII, section 747 programs should encourage the development of broad-based, sustained, quality-focused community collaboration and outreach. Such programs should follow a participatory action research model in which the community defines the objectives of the collaboration and is an equal partner in defining its health priorities. These programs should focus on providing skills to enable healthcare providers to deliver culturally effective care to diverse populations, enabling effective communication and outreach in community-based

settings, including such non-traditional settings as schools, clubs, and houses of worship, and instilling the ability to interact effectively with local public health and policy-making bodies.

7. Title VII, section 747 programs should develop innovative educational strategies that address emerging population needs and scientific advances, such as patient safety, prevention, chronic disease management,

elimination of health disparities, genomics, and first response strategies to public health hazards. Primary care practice will play a critical role in responding to rapid changes in population needs, quality of care issues, and community-oriented collaborations. Title VII, section 747 programs should support the development of innovative models and approaches to anticipate these needs and should prepare providers to monitor and adapt to such changes.

ADVISORY COMMITTEE REPORT TO THE SECRETARY OF THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES AND TO CONGRESS

PREPARING PRIMARY HEALTHCARE PROVIDERS TO MEET AMERICA'S FUTURE HEALTHCARE NEEDS: THE CRITICAL ROLE OF TITLE VII, SECTION 747

INTRODUCTION

The United States is in the midst of a National health-care crisis that is expected to intensify rapidly over the coming years. The aging of the population, increasing chronic care conditions, escalating costs of care, and an increasingly diverse patient population are expected to affect patient access, health disparities, and quality of care. The current educational environment for primary care providers will not adequately prepare them for these rapidly changing and emerging needs. New educational strategies must be fostered to increase the competencies of our Nation's primary care providers.

At the same time, the President has made it a priority to add to and expand substantially the number of community health centers across the United States to help meet the needs of the underserved. The President has also expanded the National Health Service Corps and other Federal student loan repayment and scholarship programs to help meet the staffing needs for these centers. However, without appropriate provider education and preparation, increased staffing alone will be insufficient to meet these increasing service goals. Such an expansion in community health workers requires a corresponding expansion in training to prepare them to meet the unique needs of this patient population.

The education and training of primary care providers are an integral part of preparing our country to meet the health needs of the future (Showstack, Rothman, et al., 2004; Institute of Medicine, 2002a; Starfield, 1998). More than three-quarters of U.S. adults indicate that there is one physician who they consider to be their primary care physician (Safran, 2003). A well-prepared, effective primary care workforce reduces healthcare costs and increases the quality of care for all patients (Starfield and Shi, 2002; Institute of Medicine, 2001).

Primary care professional organizations across the board have recently evaluated the future needs of their

disciplines and have made recommendations for action. Three common themes have emerged from these evaluations. Primary care providers must (1) increase their use of information technology as a tool for the following: storing patient data, communicating with patients and providers, coordinating and assuring quality care, and educating patients and communities; (2) increase interdisciplinary team care with a focus on chronic disease management, patient safety, and quality care; and (3) provide patient-centered, community-oriented care in the context of patients' personal background and that of the community, with particular attention to emerging population health threats.

Title VII, section 747's innovative education and training programs are uniquely positioned to prepare our Nation's primary care providers to meet these future needs. The Health Resources and Services Administration's (HRSA's) Bureau of Health Professions (BHP) administers these grant programs, which:

- Provide the critical means for changing our Nation's education and training programs to meet the needs of the future.
- Encourage curricular changes preparing primary care providers to meet current and anticipated healthcare needs in geriatrics, chronic disease management, bioterrorism preparation, and other critical areas.
- Support education and training initiatives, such as the *Healthy People 2010* goals to (1) increase quality of care and (2) eliminate health disparities.
- Prepare providers to deliver culturally effective care to help in the fight to eliminate health disparities.
- Prepare providers in family medicine, internal medicine, pediatrics, general dentistry, pediatric dentistry, and physician assistant programs to care for the Nation's population, with an emphasis on vulnerable populations and areas where healthcare resources are scarce.

No other Federal vehicle exists to create such structural changes in the education of our Nation's primary care providers.

PURPOSE OF THIS REPORT

The purpose of this fourth report is to emphasize the important role of these programs in helping to guide the training and education of primary care providers to meet the future healthcare needs of the U.S. population. First, this report details the accomplishments of Title VII, section 747 programs. Second, it describes the importance of primary care providers, the challenges in the primary care medicine and dentistry environment, and the future needs of the disciplines. Third, it outlines common themes among the disciplines and suggests the future role of Title VII, section 747 programs in training primary care providers to meet these needs. The report concludes with a specific set of recommendations that address how Title VII, section 747 programs can help prepare providers to meet the needs of a changing healthcare environment.

TITLE VII, SECTION 747 ACCOMPLISHMENTS

HRSA's mission is to improve and expand access to quality healthcare for all. The express mission of HRSA's BHP_r is to eliminate barriers to care, to eliminate health disparities, to assure quality of care, and to improve public health and healthcare systems. Title VII, section 747 programs, through fostering changes in undergraduate and graduate curricula and training, and in the development and training of faculty, provide critical support in the strategic mission of both HRSA and the Bureau.

Title VII, section 747 programs have been extremely effective over the years in influencing the content and capacity of primary care education and training, and

consequently the quality of care in the U.S., by transforming the landscape of primary care training and practice. From their beginnings, Title VII, section 747 programs have helped to develop and expand training programs for primary care providers to promote diversity in the workforce, to ensure that health professions curricula respond to the changing demands and emerging needs of the population, and to improve the Nation's health by assuring equitable access to a high-quality, healthcare workforce. With just a 1 percent share of the HRSA budget, Title VII, section 747 programs have achieved remarkable success (see chart at bottom of left column).

For example, Title VII, section 747 funding has produced the following outcomes.

Providing Service to the Underserved

Primary care graduates of Title VII, section 747 programs are two to four times more likely than other graduates to serve minority and disadvantaged populations by practicing in medically underserved communities (see chart on page 3).

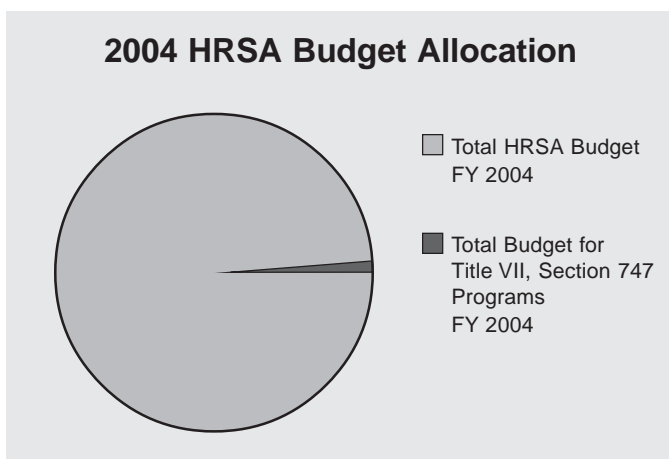
Further, according to a recent study by the Robert Graham Center, Title VII funding of family medicine programs has had a significant influence in the expansion of the primary care physician workforce and in increased physician accessibility for people in rural and underserved communities (Freyer, Meyers, et al., 2002).

Increasing the Number of Minority and Disadvantaged Providers

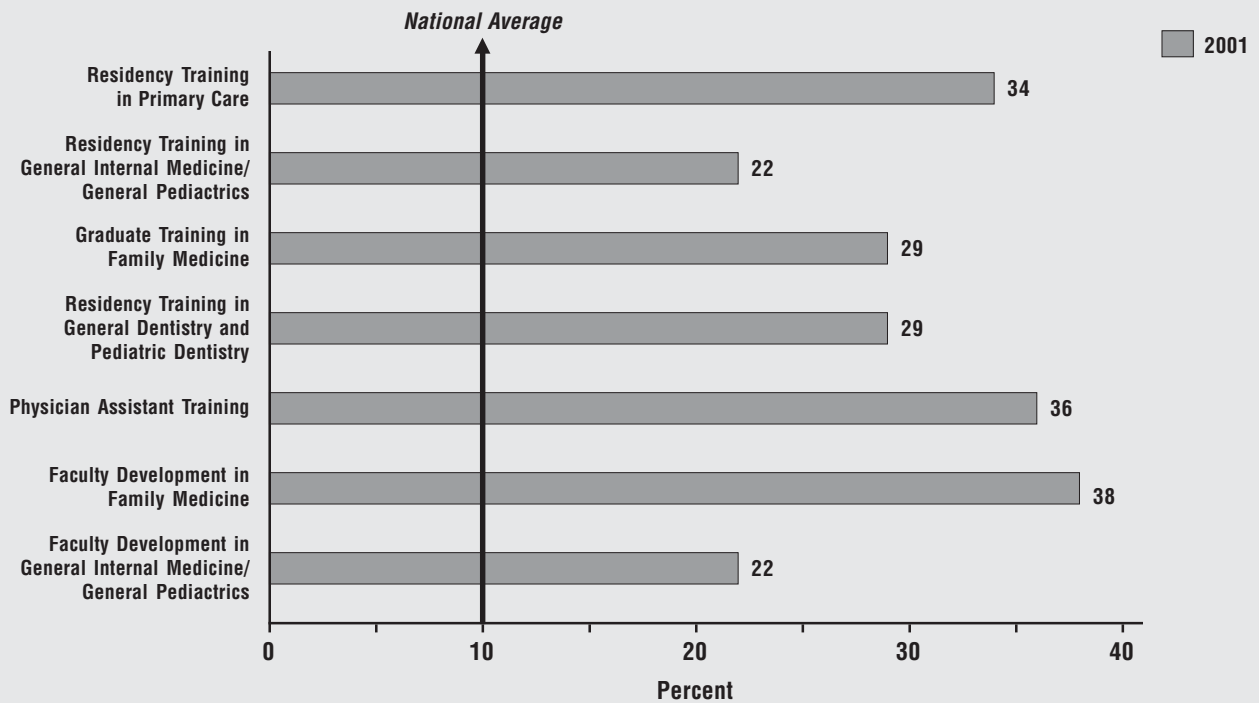
Programs funded under Title VII, section 747 have significantly increased the number of underrepresented minority enrollees, graduates, and faculty in healthcare education. Title VII, section 747-supported programs graduate four to seven times more minority and disadvantaged students than other programs (see chart on page 4). ***These programs support, on average, the development of over 10,000 underrepresented minority graduates, residents, and faculty each year*** (U.S. Department of Health and Human Services, 2001).

Developing Primary Care Providers

Title VII, section 747 programs are instrumental in fostering the development of primary care providers to meet anticipated healthcare needs. In the past 3 years, Title VII, section 747 programs have provided support to 21 of the top 25 primary care-producing schools (Association of American Medical Colleges, 2003).



Title VII, Section 747-Funded Program Graduates Are 2 to 4 Times More Likely to Practice in Medically Underserved Communities Than the National Average



Sources of Data:

- 1) **Program Graduates:** U.S. Department of Health and Human Services (2004a). Comprehensive Performance Management System internal data from Health Resources and Services Administration, Bureau of Health Professions, National Workforce Center, Rockville, MD.
- 2) **National Average:** Calman, N. (1991). Data on U.S. health professions graduates entering medically underserved areas. Presentation to the New York Council on Graduate Medical Education, New York, NY: New York Council on Graduate Medical Education.

Preparing Providers to Meet Priority Healthcare Needs

Title VII, section 747 grant programs have been instrumental in preparing providers to meet priority healthcare needs. Over the past 3 years, Title VII, section 747 grant programs have supported each of the ten *Healthy People 2010* Leading Health Indicators: Priorities for Action to increase quality and years of life and to eliminate health disparities (see table on page 5). Title VII, section 747 programs have also supported other critical areas, such as oral health, a *Healthy People 2010* Focus Area.

THE IMPORTANCE OF PRIMARY CARE

Overview of Primary Care

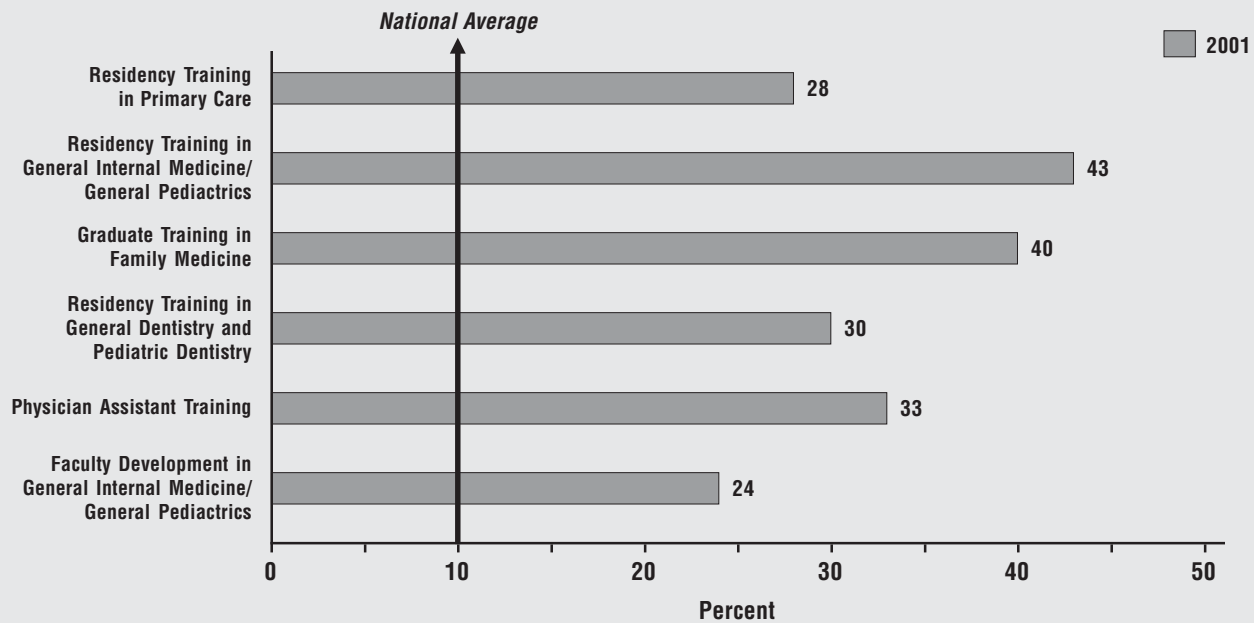
The Institute of Medicine (IOM) defines primary care as the provision of integrated, accessible healthcare services by clinicians who are accountable for addressing a

large majority of personal healthcare needs and for developing sustained partnerships with their patients (Institute of Medicine, 1996). Primary care providers are essential in:

- Providing a place to which patients can bring a wide range of health problems.
- Guiding patients through the healthcare system.
- Facilitating ongoing relationships between patients and clinicians within which patients participate in decision making about their health and healthcare.
- Emphasizing disease prevention and health promotion as well as early detection of disease.
- Building bridges between personal healthcare and patients' families and communities (Institute of Medicine, 1996).

Primary care traditionally represents the medical and dental home for a patient, providing continuity and

Title VII, Section 747-Funded Program Graduates Have 4 to 7 Times More Minority and Disadvantaged Graduates Than the National Average



Sources of Data:

- 1) **Program Graduates:** U.S. Department of Health and Human Services (2004a). Comprehensive Performance Management System internal data from Health Resources and Services Administration, Bureau of Health Professions, National Workforce Center, Rockville, MD.
- 2) **National Average:** U.S. Department of Health and Human Services (2004b). National Center for Health Workforce Information and Analysis: Average U.S. health professions workforce minority representation. Compiled by Health Resources and Services Administration, Bureau of Health Professions, National Workforce Center based on U.S. Census Bureau Decennial data, 1990. Rockville, MD.

integration of healthcare over a long period of time. The role of the primary care provider is to act as the initial and central point of contact with the healthcare system for each patient and to coordinate all the care the patient receives. These functions include integrating patient concerns, coordinating care, and ultimately providing a patient-centered experience. The aims are to provide the patient with a broad spectrum of care, both preventive and curative.

Primary care providers serve as the cornerstone for ensuring continuity of care throughout a patient's life. More than three-quarters of U.S. adults indicate that there is one physician who they consider to be their primary care physician (Safran, 2003). This rate has remained remarkably stable over the past several decades, despite substantial changes in the U.S. healthcare delivery system. Moreover, despite changes in the marketplace, these relationships tend to endure for years (Safran, 2003).

Primary care provides continuity, first contact, comprehensiveness, coordination, community orientation, family-centeredness, and cultural competence (Starfield,

1998; Showstack, Rothman, et al., 2004). In dental care, primary care providers are general dentists and pediatric dentists who coordinate the oral healthcare for their patients. Similar to the concept of a "medical home," a "dental home" implements preventive health practices and reduces a patient's risk of preventable dental/oral disease (American Association of Pediatric Dentistry, 2001).

On a community level, these providers serve as communicators of the latest research findings, leaders guiding community health promotion initiatives, and coordinators of teams addressing the complex care needs of a growing aging population.

"Primary care is the logical foundation of an effective health care system" (Institute of Medicine, 1996).

Researchers have found that the unique ability of these providers to reach populations before illness onset and to provide early treatment is critical to the improvement of health outcomes and to the reduction of healthcare costs (Starfield and Shi, 2002). Primary care

HEALTHY PEOPLE 2010 LEADING HEALTH INDICATOR	Title VII, Section 747 Grants 2001	Title VII, Section 747 Grants 2002	Title VII, Section 747 Grants 2003	Number of Grants in Priority Area (over 3 years)	Percentage of Total Grants (over 3 years)¹
Overweight and Obesity²	53	80	132	265	26.7
Substance Abuse³	159	131	186	476	47.9
Responsible Sexual Behavior⁴	N/A	N/A	79	79	23.2
Mental Health⁵	74	112	102	288	29.0
Injury and Violence⁶	62	104	114	280	28.2
Access to Care – Minority Health⁷	212	196	263	671	67.5
Access to Care – Underserved⁸	245	217	278	740	74.4
Access to Care – Provider Connectivity⁹	95	105	112	312	31.4
Access to Care – Community-Based Initiatives¹⁰	140	214	188	542	54.5
Oral Health¹¹	N/A	65	73	138	20.4

¹ Percentage calculated by dividing the number of grants across the years that the activity was a special priority area by the total grants across those years. There were 316 grants for FY 2001, 338 grants for FY 2002, and 340 grants for FY 2003, for a total of 994 grants for all 3 years.

² Title VII, section 747 grant priority areas: Obesity and Nutrition.

³ Title VII, section 747 grant priority areas: Behavioral Health and Substance Abuse.

⁴ Title VII, section 747 grant priority area: Sexually Transmitted Diseases.

⁵ Title VII, section 747 grant priority areas: Mental Health Issues.

⁶ Title VII, section 747 grant priority area: Domestic Violence.

⁷ Title VII, section 747 grant priority areas: African American, American Indian/Alaska Native, American Indian/Alaska Native Initiatives, Hispanic Initiatives, Minority Health Issues, Minority Recruitment/Retention, and Cultural Competence.

⁸ Title VII, section 747 grant priority areas: Border Health Activities, Clinical Training in Sites Serving Underserved Areas, Community Health Centers, Governor-Designated Areas, Health Professions Shortage Areas, Home Health, Homeless Issues, Migrant Health Issues, Rural Health, Rural Health Clinics, Urban Health, and Home Health.

⁹ Title VII, section 747 grant priority areas: Telemedicine/Telehealth and Distance Learning.

¹⁰ Title VII, section 747 grant priority areas: Community-Based Continuity of Care Experiences and Health Departments.

¹¹ Title VII, section 747 grant priority area: Oral Health Initiatives. Oral Health is a *Healthy People 2010* Focus Area.

is “associated with more indicated preventive care, better identification of patient’s psychosocial problems, fewer emergency hospitalizations, fewer hospitalizations in general, shorter lengths of stay, better patient compliance with appointments and taking of medications, and more timely care for problems” (Starfield, 1998).

Historical Perspective of Primary Care

In the early 1900s, patients depended primarily on their family or general care providers for the majority of their healthcare needs. Over time, this healthcare system evolved into a segmented system of care in which patients saw highly specialized providers for care, depending on their specific healthcare need. In the 1960s, only 40 percent of the population had a generalist physician (Bodenheimer, Lo, et al., 1999). Patients often sought care directly from

specialists, sometimes resulting in costly or duplicative diagnostic and therapeutic interventions.

Medical reformers responded to this issue by developing the concept of primary care. In 1975, the current concept of primary care was first formulated in the United States through the development of primary care programs for physician assistants and family physicians. In 1977, this growth promoted the concept of a healthcare manager, mainly a primary care provider. In that year, 78 percent of all adults named a particular physician to be their “regular source” of care (Agency for Healthcare Research and Quality, 1977). Before primary care was firmly established, the growth in managed care changed the role of the primary care provider to one closer to gatekeeper (Bodenheimer, Lo, et al., 1999). However, despite the backlash against managed care, the concept of a primary care provider has remained, with over half the doctors’ visits in

the Nation last year being to family physicians, internists, and pediatricians (Bodenheimer, Lo, et al., 1999).

Primary Care Disciplines

The primary care disciplines funded through Title VII, section 747 programs are briefly described below.

- **Family Medicine** – Family medicine provides continuing and comprehensive healthcare for the individual and the family and integrates the biological, clinical, and behavioral sciences. The scope of family practice encompasses all ages, sexes, and each organ system and type of disease.
- **General Internal Medicine** – General internists' expertise includes longitudinal, coordinated, and comprehensive care of ambulatory and hospitalized adults, especially those with complex and chronic diseases. General internists emphasize prevention, evidence-based practice, patient-centered care, and the cultural, behavioral, and ethical aspects of health.
- **General Pediatrics** – Pediatricians provide care for the physical, emotional, and social health of children from birth to young adulthood. Services range from preventive healthcare to the diagnosis and treatment of acute and chronic diseases, with an emphasis on continuity of care.
- **Medicine-Pediatrics** – Medicine-pediatrics providers possess the core knowledge and skills of both general internal medicine and general pediatrics.
- **Physician Assistants** – Physician assistants are licensed healthcare professionals who practice medicine with physician supervision. Physician assistants conduct physical exams, diagnose and treat illness, order and interpret tests, counsel on preventive healthcare, assist with surgery, and, in most States, write prescriptions.
- **General Dentistry** – General dentistry is the profession responsible for the diagnosis, treatment, management, and overall coordination of preventive and therapeutic services that address patients' oral health needs.
- **Pediatric Dentistry** – Pediatric dentistry is an age-defined dental specialty that provides both primary and comprehensive preventive and therapeutic oral healthcare for infants and children through adolescence, including those with special healthcare needs.

CHALLENGES IN THE PRIMARY CARE MEDICINE AND DENTISTRY ENVIRONMENT

There have been extraordinary changes over the past 20 years in the healthcare environment, and the Nation is expected to face even greater changes over the coming decades.

"The American health care delivery system is in need of fundamental change . . . the frustration level of both patients and clinicians have probably never been higher" (Institute of Medicine, 2001).

In this section, the major changes that will affect tomorrow's primary care workforce are described.

Aging Population

Census projections show the Nation's population will grow 18 percent between 2000 and 2020. However, the number of persons aged 65 and older is expected to grow 54 percent between 2000 and 2020 (U.S. Census Bureau, 2000). The aging population and its increased use of healthcare are expected to place unprecedented demands on the healthcare system, particularly on primary care providers (Carroll, 2003). By 2020, almost 40 percent of a physician's time will be spent treating the aging population (U.S. Department of Health and Human Services, 2004c).

Racial and Ethnic Diversity

Demand for healthcare services by minorities is expected to increase as the percentage of minorities in the U.S. population grows (U.S. Department of Health and Human Services, 2004c). Minorities are expected to compose 46 percent of the total population by the year 2050 (U.S. Census Bureau, 2000).

Increased Need for Chronic Disease Management

Approximately 125 million Americans are currently living with a chronic condition, with a large subset dealing with multiple conditions (Johns Hopkins University, 2002). Disabling chronic conditions affect all age groups, but about two-thirds are found in people over the age of 65 (Institute of Medicine, 2003). The increased aging of the population will likely increase the prevalence of multiple chronic care conditions (Horvath, 2003).

Chronic care conditions disproportionately affect the costs of healthcare. The Robert Wood Johnson Foundation estimates the current cost associated with these conditions to be “more than two-thirds of all healthcare expenditures” (Bodenheimer, Wagner, et al., 1999). Medical and technological advances have also increased the prevalence of chronic diseases in the younger populations, as people are surviving many previously fatal conditions or injuries (such as prematurity or congenital anomalies in infants) and now require care for their chronic conditions. Further, it is estimated that 15–18 percent of U.S. children have a chronic physical, developmental, behavioral, or emotional condition requiring health and related services of a type or amount beyond that required by children generally (Newacheck, Strickland, et al., 1998).

Research is showing that the “acute care” model in which patients see a doctor only when ill, or get a prescription or other treatment and do not think about medical care until the next illness (a model in use for the past 30 years), does not hold up well in this environment (Rothman and Wagner, 2003; Bodenheimer, Wagner, et al., 2002). Increased emphasis on prevention, early detection, intervention, and case management of these conditions will be needed to reduce costs and improve quality of care for patients. Because the majority of chronic disease care is performed within the primary care setting (Bodenheimer, Wagner, et al., 2002), primary care providers are expected to be at the forefront of managing chronic diseases, providing both preventive care and case management (Horvath, 2003).

Increased Emphasis on Eliminating Disparities in Quality of Care

Research has shown that racial and ethnic minorities receive lower quality healthcare, even when factors including insurance, income, age, and education are accounted for (Institute of Medicine, 2004a). These disparities result in increased mortality and morbidity, decreased quality of life and productivity, and overall increased healthcare costs (House, 2002). Evidence indicates that increasing the diversity of the healthcare workforce has a positive impact on the care that racial and ethnic minorities receive, increasing patient choice and satisfaction (Institute of Medicine, 2004). Additionally, ethnic and racial minority providers are significantly more likely than their white peers to serve minority and underserved communities, improving minority access to care (Institute of Medicine, 2004a).

Another emerging issue in healthcare disparities is one with respect to persons with mental retardation.

Individuals with mental retardation, numbering up to 7.5 million adults and children, are more likely to receive inappropriate, inadequate treatment or be denied healthcare altogether (Horwitz, Kerker, et al., 2000). The Surgeon General has stated that it is imperative that providers receive adequate training in treating persons with mental retardation (U.S. Department of Health and Human Services, 2002).

The education and training of diverse, culturally competent healthcare providers are, and will be, critical to addressing disparities in care in the future (Advisory Committee on Training in Primary Care Medicine and Dentistry, 2003).

Costs of Care

The cost of healthcare services continues to rise, with Americans having spent a total of \$1.4 trillion in 2001. Increased consumer demand for healthcare and, in particular, for expensive new technologies has been cited as a driving force in increasing healthcare costs (PriceWaterhouse Coopers, 2002). Estimates project that by 2012 Americans will be spending \$3.1 trillion (Kaiser Family Foundation, 2004). Increasing healthcare costs over the coming years are expected to affect everything from access to care to quality of care (Kaiser Family Foundation, 2003).

At the provider level, the largest contributors to rising costs include litigation and risk management (including defensive medicine), rising malpractice expenses, and unfunded Federal and State mandates (such as the Health Insurance Portability and Accountability Act [HIPAA] privacy rule).

On the patient level, employers are moving to more aggressively shift healthcare costs to their employees, targeting a broader scope of services than ever. This shift includes increases on employee’s share of health insurance premiums, increased co-pays for drugs and doctor visits, and increased limitations on coverage (Lesser and Ginsburg, 2003).

Rising healthcare costs also affect academic healthcare centers, which provide much of the research and training in primary care in addition to being a critical component of the healthcare safety net (Institute of Medicine, 2003). These health centers are facing more stringent reimbursement policies for both privately and publicly funded care, increased cost outlays for new medical technologies, and changing demands of healthcare education. These financial demands decrease the funding available for student recruitment, curricular changes to meet emerging issues, modernization of

teaching methods, and resources for the next generation of primary care providers (Li, Arenson, et al., 2003; Seldin and Brown, 2002).

Containing costs will require a shift in focus, namely “reducing errors, eliminating waste and duplication in clinical care, modernizing and streamlining administration, promoting transparency and accountability for performance and aligning financial incentives for physicians, hospitals, and other healthcare providers to reward high quality and efficient care” (Davis, 2003).

Financial Access to Care

According to most recent estimates, over 43 million Americans lack health insurance. Studies have repeatedly shown that uninsured individuals are more likely to delay or postpone getting healthcare (Kaiser Family Foundation, 2003). The uninsured are less likely to have a regular source of care and are more likely to seek care in a health clinic or emergency room (McLaughlin and Mortensen, 2003). Most studies anticipate an increase in the number of uninsured over the coming years (Hadley and Holahan, 2003; Reinhardt, 2003). Factors such as inflation, decreased medical and dental resources, increased costs, and decreased availability of healthcare providers are several factors expected to affect this situation (Kaiser Family Foundation, 2003).

Further, over 180 million people do not have dental insurance (Mertz and O’Neil, 2002). The Surgeon General’s Report on oral health found that lack of dental insurance, private or public, is one of several impediments to obtaining oral healthcare and accounts in part for the generally poorer oral health of those who live at or near the poverty line, lack health insurance, or lose their insurance upon retirement (U.S. Department of Health and Human Services, 2000). Low reimbursement rates, associated with public insurance programs such as Medicaid, are often the reason that dentists decline providing care to the poor and underserved (American Dental Education Association, 2002).

Two trends in the health insurance environment include (1) an increase in “out-of-pocket costs” and (2) the phenomenon of “underinsurance” (Trude, 2003). The underinsured are those who have health insurance, but face significant cost sharing or limits on benefits. Recent studies suggest that the underinsured compose about one-fifth of all insured individuals (Lundy, Levitt, et al., 2002). In fact, 38 percent of insured individuals report that they or their families experienced at least one problem accessing medical services in the past year;

18 percent reported that they postponed seeking medical care; and 15 percent had a problem paying medical bills (Lundy, Levitt, et al., 2002).

Increased healthcare costs, coupled with an economic slowdown, have led to a projected decline in employer-based health insurance coverage. Since this type of coverage is the main way in which people under 65 obtain health insurance, it is expected that more older people will be facing the loss of their health insurance in the future (Kaiser Family Foundation, 2004). New means will need to be established to reach out to those who require care.

Supply of Primary Care Providers and Faculty

The need for primary care medical and dental services will continue to increase as the U.S. population expands and ages. However, studies indicate that the current supply of medical and dental students will not meet the demand for future primary care providers (Biola, Green, et al., 2003a; Newton and Grayson, 2003; Haden, Weaver, et al., 2002). Studies show a recent decrease in the percentage of U.S. medical student graduates choosing a primary care career (Urbina, Solan, et al., 2003; Biola, Green, et al., 2003a), a projected drop in the number of dentists, and an expected shortage of primary care medical and dental faculty to meet future healthcare needs (Bailit, Weaver, et al., 2003).

The Association of American Medical Colleges data show a decrease in medical student interest in primary care careers, from 36.6 percent in 1999 to 21.5 percent in 2002 (Newton and Grayson, 2003; Lane, 2000). Factors affecting the supply of primary care providers include the National shortage of medical students interested in primary care, skyrocketing tuition rates and related student debt burdens, exorbitant malpractice premiums, legal liability issues, and under-reimbursement for primary care services (Biola, Green, et al., 2003b). In terms of primary care medicine, more postgraduates elect to pursue medical specialties as opposed to primary care, which is viewed as too broad, with high patient loads, less controllable lifestyles, and often, increasingly stressful practice settings (Urbina, Solan, et al., 2003).

Correspondingly, the projected number of active dentists in 2020 is expected to drop 23 percent from its high in 1987 (American Dental Association, 2002). There is currently a shortage of pediatric dentists (Davis, 2000; American Academy of Pediatric Dentistry,

2001). The escalating U.S. population, the aging of the population, the maldistribution of dentists, and the geographic disparity of oral healthcare providers contribute to the problem of difficult access to dental care for those in need (Douglass and Watson, 2002; Douglass, 2003; American Dental Education Association, 2002). In fact, the areas designated by HRSA as dental professional shortage areas have grown from 700 in 1993 to over 1,800 in 2002 (Hadley and Holahan, 2003). The shortage of dentists to care for an increasingly aging and diverse population means that people will have less access, particularly if Title VII programs are underfunded or neglected.

There is also projected to be an insufficient number of primary care faculty needed to train prospective medical students to become primary care providers (Haden, Weaver, et al., 2002; Lane, 2000). There is a current and growing gap in the number of dental faculty needed to train dental students (Haden, Chmar, et al., 2004). Approximately one out of four dental schools has ten or more faculty vacancies (Haden, Weaver, et al., 2002). "There is no indication of a near term reversal of the decade long trend toward increasing budgeted vacancies, and the current economic environment makes the challenge to recruit and retain dental faculty more difficult" (Haden, Weaver, et al., 2002).

Emphasis on Underserved Areas

There is a maldistribution of primary care providers, creating health profession shortage areas in rural and urban areas across the country (Basco, Buchbinder, et al., 1999). Further, studies show that existing providers who are working in underserved areas are insufficiently prepared (Basco, Buchbinder, et al., 1999). The President's Health Center Expansion Initiative will expand or create 1,200 new health centers in underserved areas in the United States (Thompson, 2002). Initiatives such as these will require that there be a steady supply of well-prepared primary care providers willing to work in underserved areas. In addition, there needs to be a greater emphasis on preparing undergraduate students and residents to provide culturally effective care.

Studies have shown that minority healthcare professionals are more likely to serve in underserved areas (Institute of Medicine, 2002a; Salsberg and Forte, 2002). However, there has been difficulty recruiting minority healthcare professionals across all medical disciplines and in dentistry and physician assistant programs. More emphasis must be placed at

the National and local levels, especially within high schools, to increase student awareness of healthcare as a career choice.

Information Technology

Information technology has enormous potential to improve care through uniform electronic medical records, electronic communication among healthcare providers, electronic prescribing (e-prescribing), and quick access to information over the Internet. Studies have shown that the use of computerized systems in regular primary care practice, such as reminder prompts and physician performance feedback, improve both physician performance and patient outcomes (Bodenheimer and Grumbach, 2003).

Primary care providers increasingly use the Internet to gather and keep abreast of medical information, conducting hundreds of millions of Medline searches a year (Bodenheimer and Grumbach, 2003). Additionally, healthcare providers use the Internet to keep up with their continuing education requirements, with one study showing that almost three-quarters of all practicing U.S. physicians having participated in some form of electronic continuing medical education in 2003 (Manhattan Research, 2004). E-mail may soon overtake telephone and written correspondence between providers.

Despite all this promise, the integration of information technology in primary care has been slow. In 2001, the IOM recommended that the healthcare system make a commitment to eliminate most of the handwritten clinical data by the end of the decade (Institute of Medicine, 2001). Yet, a year later, only 17 percent of primary care offices used electronic medical records. The recent Manhattan Research study also found that although many physicians expressed interest in physician-patient online communication, only one-fifth currently communicate with their patients in this manner (Manhattan Research, 2004). As of 2001, only 6 percent of physicians were using e-prescribing, but the number is growing (Bodenheimer and Grumbach, 2003). Barriers to widespread use of information technology have been documented, such as software incompatibility, patient privacy concerns, and time and cost issues (Bodenheimer and Grumbach, 2003).

Information technology has also had a significant effect on patients. The expansion of the Internet has made medical information readily available to the general public. Currently, about 20 percent of American adults use the Internet to access health information,

and a growing number of patients bring online search results to their physicians' offices (Bodenheimer and Grumbach, 2003). In the future, many patients will increasingly direct their own healthcare as they acquire more information on their conditions, and providers will need to form collaborative partnerships with their patients to deliver quality care.

The potential for overall care integration through electronic medical records and e-prescribing has the potential to decrease the risk of medical errors and increase overall quality of care. Primary care providers, though, will need to be trained to ensure their capabilities to both effectively use the new technologies and integrate their use into practice.

Increased Emphasis on Quality of Care and Patient Safety

Medical errors have been documented for many years, but this issue did not come to the forefront of the public's attention until the IOM report *To Err Is Human: Building a Safer Health System* indicated that between 44,000 and 98,000 persons die in U.S. hospitals each year as a result of medical errors (Institute of Medicine, 1999). The term "medical error" encompasses many issues in both inpatient and outpatient settings, from patient falls because of a lack of restraints, to mistakes in administering medications, to miscommunication among multiple providers involved in a patient's care. Total National costs (lost income, lost household production, disability, and healthcare costs) of preventable adverse events (medical errors resulting in injury) are estimated to be between \$17 billion and \$29 billion, of which healthcare costs represent more than one-half.

Although most attention has been focused on patient safety in the hospital setting, increasingly the focus has shifted to primary care providers as key to ensuring the safety of their patients. The likelihood of errors increases when patients see multiple providers in different settings, and none of the providers has access to complete information. The training of primary care providers as leaders in the coordination of care is essential in increasing the quality of care and reducing medical errors.

In the landmark *Crossing the Quality Chasm, A New Health System for the 21st Century* report, the IOM defined the framework for the healthcare system of the 21st century. According to the IOM, a healthcare system should be **safe, effective, patient centered, timely, efficient, and equitable** (Institute

of Medicine, 2001). A highly skilled, well-trained primary care provider is central to the realization of the IOM's framework.

FUTURE NEEDS OF PRIMARY CARE DISCIPLINES

The primary care workforce comprises many medical and dental disciplines. Each of the primary care disciplines has recently completed an evaluation directed at determining the future needs of its providers. These groups reviewed the anticipated demands of the future and made recommendations for needed changes within their disciplines. The overarching theme of each report was focused on ensuring and enhancing the quality of patient care. In this section, each of the primary care disciplines, the specific challenges each will face in the future, and the specific future needs of its providers are described.

Family Medicine

Family physicians care for more patients and provide care for a wider variety of health problems than physicians of any other specialty. In 2001, family physicians were responsible for approximately 210 million (or 24 percent) of the 880 million patient visits to physicians (U.S. Department of Health and Human Services, 2004c). Recent studies have shown that family physicians achieve equal or better outcomes with a lower per episode cost than other specialties (Graham and Roberts, 2002).

Family physicians, however, are dealing with a healthcare system that is seeing rapid change in terms of patient care, financing, and organization. The *Future of Family Medicine (FFM) Project*, a joint effort of the Family Practice Working Party and the Academic Family Medicine Organizations, recently surveyed patients, students, and providers, to evaluate the state of family medicine (Future of Family Medicine Project, 2004). In 2002, a National research study was conducted by independent research firms. Interviews and focus groups identified key issues for diverse constituencies, including patients, payers, residents, students, family physicians, and other clinicians. Subsequently, interviews were conducted with Nationally representative samples of nine key constituencies. In part, on the basis of these data, five task forces addressed key issues to meet the project goal. A Project Leadership Committee synthesized the task force reports into the *Future of Family Medicine Report*.

The FFM Project reported that family physicians felt undervalued in the medical community even though their quality of care was highly valued by their specialist colleagues. In terms of their patients, the study found that “patients value communication and their relationship with their physicians above service and all other aspects” (Future of Family Medicine Project, 2004). The FFM Project also reported that patients highly valued, and expected, the sophisticated use of technology by their physician. Medical students, overall, had a positive view of family medicine, but had concerns about finance, prestige, and lifestyle issues (Graham and Roberts, 2002).

Medical student interest, however, in family practice has been declining. Factors include long work days, lower comparative pay, and the perceived lack of professional fulfillment (Graham and Roberts, 2002). At the same time, the need for family physicians is anticipated to increase (Biola, Green, et al., 2003a). Student interest in family medicine will need to be heightened to ensure a sufficient number of family providers to meet the ever-increasing U.S. population.

The FFM Project recommends that there be a new model of family medicine, which will:

- **Value and encourage the use of technology.** The move toward electronic medical records and e-prescribing, as well as other technologies, will significantly alter how physicians practice. Family physicians will need to be trained in, and implement, technological enhancements that will improve the efficiency of their practice.
- **Enhance communication efforts.** Family physicians will need to use new communication methods to help them care for their patients.
- **Focus on education at all levels.** Family physicians will need to focus on education, with respect to greater types and complexity of procedures.
- **Encourage activities that further patient safety and quality of care.** Family physicians will need adequate training in how to provide competent, quality care to increasing numbers of ethnic and racially diverse patients.
- **Increase interdisciplinary collaborations in patient care.** Family physicians will need to become more familiar with interdisciplinary modes of treatment to address more complex chronic care conditions.

The American College of Osteopathic Family Physicians (ACOFP) made the following additional recommendation:

- **Increase coverage of pain management issues.** Pain management education needs to be further integrated into both continuing education and medical school curricula. ACOFP is concerned that there may be restrictions on who can prescribe these medications and on pharmacies that can provide them.

General Internal Medicine

General internists provide a broad range of care that includes general and comprehensive care of ambulatory patients with an emphasis on prevention, screening, and the behavioral aspects of health and disease. General internists are particularly adept at caring for chronically ill patients and those with multiple diseases. In 2003, general internists handled 134 million patient visits (U.S. Department of Health and Human Services, 2004c).

In 2002, the Society of General Internal Medicine (SGIM) set up a task force to address the future issues related to their discipline. The report *The Future of General Internal Medicine: Report and Recommendation* examined the core values and competencies of general internal medicine, the changes in the healthcare environment, and the implications of those changes for general internal medicine practice, training, and research (Larson, Kirk, et al., 2003). The task force reported that the current state of medical care was rapidly changing due, in part, to the increasing number of uninsured and the rapid increases in costs, as well as medical errors and unsafe systems of care (Task Force on the Domain of General Internal Medicine, 2003). The task force also noted that advances in technology provided unprecedented opportunities for the discipline.

The task force stated that the future of healthcare will include asynchronous communications, higher patient education and direct patient access to his or her medical information, better informed patients partnering with physicians in administering care, an increase in remote care, and an increase in both the number of people in need of care and the number afflicted with chronic conditions. Recently published reports on the Future of Medical Student Education and Resident’s Education by the Clerkship Directors of Internal Medicine (CDIM) and the Association of Program Directors in Internal Medicine (APDIM) highlight many of these same issues, including practice in healthcare teams, chronic disease management, use of information technology, and skillful communication with an increasingly diverse patient population (Whelan,

Appel, et al., 2004; Smith, Humphrey, et al., 2004). The SGIM Task Force on the Future of General Internal Medicine recommended that general internists:

- **Enthusiastically utilize information technology**, especially those tools that increase partnerships with patients, increase efficiency of care, reduce costs, and ultimately improve outcomes. Efficiencies brought about by informatics hold great promise, but there is a need for greater training, practice, and standardization.
- **Enhance communication skills** with an increasingly educated public and an increasingly greater racial and ethnic mix of patients. Effective communication with both patients and other health professionals will be essential.
- **Focus on the utilization of interdisciplinary teams and collaborative team efforts.** Complex cases increase the need for further interdisciplinary team approaches. General internists need to learn leadership skills and work as part of an interdisciplinary team of providers. General internists will need to devise new and creative ways to manage patients jointly with their subspecialty colleagues.
- **Train faculty** to master skills related to care delivery, practice management, information systems, and interdisciplinary team building and leadership. The task force also recommended that graduates, residents, and practicing internists focus on developing the mastery of these skill sets.
- **Encourage changes in the reimbursement system** to reflect the changing practice environment (such as recognizing and reimbursing for non-traditional patient visits) and to provide incentives to address the needs of the future.

Osteopathic Medicine

Osteopathic medicine is a distinctive form of medical practice in the United States. Osteopathic medicine provides all the benefits of modern medicine including prescription drugs, surgery, and the use of technology to diagnose disease and evaluate injury. It also offers the added benefit of hands-on diagnosis and treatment through a system of therapy known as osteopathic manipulative medicine.

Traditionally, a high percentage of doctors of osteopathy (DOs) has chosen to practice primary care medicine relative to allopathic physicians (American Osteopathic Association, 2004). Currently, 65 percent of practicing DOs are in the primary care specialties of

family medicine, general internal medicine, or general pediatrics. Recent data show that increasing numbers of senior osteopathic medical students are applying to residency through the National Resident Matching Program (NRMP); of NRMP applicants from the 2003 class of senior osteopathic medical students, only 30 percent showed an intention of going into primary care (National Resident Matching Program, 2004). However, less than one-half (45 percent) of osteopathic senior students enter residency through the NRMP. Of the other 55 percent who participate in the AOA Intern/Resident Registration Program, approximately 91 percent entered into a primary care program (Obradovic, and Winslow-Falbo, 2003). Thus, it is unclear at this point whether there is any discernible movement of DOs away from primary care medicine.

Pediatrics

General pediatricians provide the majority of primary healthcare to children from birth to young adulthood. Their services range from preventive healthcare to the diagnosis and treatment of acute and chronic diseases, with an emphasis on continuity of care. In 2000, 68 percent of childcare visits to primary care providers were to general pediatricians (Tang, Olson, et al., 2004). Pediatric continuity of care has been associated with timely immunizations, parent reports of higher quality of care, and better care coordination (Christakis, Kazak, et al., 2004).

Pediatricians face many challenges in the future. Recently, National organizations representing the pediatric community commissioned a task force to review the changes in the healthcare system that affect pediatric medicine and to make recommendations for action. The resultant report, *The Future of Pediatric Education II (FOPE II)*, noted the many challenges facing pediatrics. These include the changing population demographics, an increasing number of children in poverty, an increase in ethnic and racial diversity, changing family structures, tremendous advances in genetics and biomedical medicine, advances in technology, and the need to be first responders to population health events (Simon, Chesney, et al., 2003). Further challenges lay in healthcare delivery, with the increasing utilization of managed care, increased administrative requirements, changing patterns of morbidity, a rise in chronic disease, and an increase in the prevalence of developmental and psychosocial problems (Simon, Chesney, et al., 2003). Chronic conditions are expected to affect a larger proportion of the pediatric

population, from common afflictions to more complex illnesses (Simon, Chesney, et al., 2003).

This report made a number of recommendations to prepare the pediatric community for the challenges ahead. Pediatricians, in the future, will need to:

- **Focus on more interdisciplinary approaches** that bring in other subspecialties to address the more complex and chronic conditions. The pediatrician, in the interdisciplinary team framework, would be the continuity provider for the child or adolescent.
- **Increase the number of, and interact more with, pediatric subspecialists.** Given the anticipated increase in chronic disease and more complex conditions, there will continue to be a need for greater numbers of pediatric subspecialists. Pediatricians will also need to learn to interact more in an increasingly specialized, team-oriented environment.
- **Increase diversity and foster cultural competency** in pediatric healthcare providers so that they relate better and provide greater quality of care to increased numbers of culturally diverse populations. Recent studies have shown that patients with different racial and ethnic backgrounds, as well as other cultural attributes such as sexual orientation, religion, and socioeconomic status, suffer from health disparities and have lower overall quality of care (American Academy of Pediatrics, 2004; Flores, Laws, et al., 2003; Hedayat and Pirzadeh, 2001).
- **Address child health in the context of family and community.** With globalization, bioterrorism threats, new infectious diseases, environmental health threats, and other emerging threats to public health, pediatricians, as well as other primary care providers, will need to better interact with public health officials.
- **Emphasize greater use and understanding of the new technologies** that are available. Information technology has the capacity to improve patient communication, practice efficiency, and quality of care, but these improvements will require increased levels of training and practice.
- **Update knowledge of new treatments for diseases and new models of comprehensive care.** There are continually changing healthcare needs of children, including neurodevelopmental, behavioral, and genetic conditions. Rapid advances in genomics will require reeducation of pediatric providers.

Physician Assistants

Physician assistants (PAs) are licensed healthcare professionals who practice medicine with physician supervision. PAs conduct physical exams, diagnose and treat illness, order and interpret tests, counsel on preventive healthcare, assist with surgery, and, in most States, write prescriptions. PAs have been in service since the 1960s, and the scope of their service has continued to expand over the years. Studies have shown that the use of PAs is cost effective and does not compromise the quality of care provided (Cawley and Hooker, 2003). The American Academy of Physician Assistants (AAPA) estimates that 50,121 PAs were in clinical practice at the beginning of 2004 (American Academy of Physician Assistants, 2004). The U.S. Bureau of Labor Statistics projects that the number of PA jobs will increase by 53 percent between 2000 and 2010, compared to an average of 15 percent for the total number of jobs nationwide (American Academy of Physician Assistants, 2004).

PAs are a particularly fluid group, since their training allows them to change disciplines or specialties fairly readily. The primary care skills that PAs receive in their formal education are portable, and, with additional training, they can transition easily to other areas. Though there are significant fluctuations, on average, over 50 percent of PAs work in primary care (Cawley and Hooker, 2003).

In 1999, the AAPA, in concert with the U.S. Department of Health and Human Services, undertook the development of a PA strategic plan to meet the needs of the future. This report, *Into the Future: Physician Assistants Look into the 21st Century*, reviewed the anticipated changes in the healthcare environment and the potential impact on the PA profession and made recommendations for actions to be taken (American Academy of Physician Assistants, 1999). The AAPA noted a number of upcoming challenges to the profession, including an increasingly competitive market for its rapidly expanding workforce. With an increasing job market over the next decade, the employment outlook for PAs has been viewed as favorable. However, increased competition between physicians and non-physician clinicians may limit opportunities (American Academy of Physician Assistants, 1999). There is already increasing competition for PA jobs in certain areas. Further, there is growing concern that the supply of new non-physician providers is exceeding demand, meaning a tighter job market for their services (American Academy of Physician Assistants, 1999). The anticipated growth in the number of PAs will affect the balance and dynamics of PAs' relationships with physician partners

and other healthcare providers (American Academy of Physician Assistants, 1999). The challenge for these health professions will be to develop models that promote a complementary relationship.

The PA profession has, as a basis, a predisposition toward primary care, patient education, and interdisciplinary team work. However, the report recommended a number of necessary actions to meet the needs of the future, including the need to:

- **Emphasize training in cultural competency.** The increasing diversification of the U.S. population will require PAs to ensure an active cultural competency focus to meet the needs of an increasingly diverse population of consumers. PAs have a strong focus on serving underserved populations and, as such, are uniquely positioned to provide cost beneficial, culturally effective care.
- **Increase diversity.** There should be more emphasis on increasing the diversity of the student population to mirror the population in both demographics and experiences. PA programs should also create faculty development programs to assure a supply of high-quality, culturally and professionally diverse faculty.
- **Utilize technology and management tools.** Information technology is an increasingly important tool in patient communication and in providing efficient, quality care, but these improvements will require increased levels of training and practice.
- **Emphasize clinical competencies, but also recognize the limits of clinical competence.** Emphasis needs to continue to be placed on encouraging expansion of clinical expertise, while respecting the limits of clinical knowledge and knowing when to seek consultation.
- **Educate patients.** PAs play an important role in enhancing consumer knowledge and in helping consumers become more active and involved in their own care. This role will become even more important as consumers become more educated and involved.
- **Develop educational partnerships.** PAs will need to strive to develop educational partnerships with physicians and other professionals. The training models should emphasize communication skills and the ability to transfer knowledge to patients.
- **Encourage interdisciplinary training and practice.** PA programs need to ensure interdiscipli-

nary training and practice in community-oriented clinics and underserved areas to meet anticipated increasing need.

General and Pediatric Dentistry

General dentistry is responsible for the diagnosis, treatment, management, and overall coordination of services that address patients' oral health needs. Pediatric dentistry is an age-defined dental specialty that provides both primary and comprehensive preventive and therapeutic oral healthcare for children from infancy through adolescence, including those with special healthcare needs.

Dental caries is the single most common and chronic childhood disease (U.S. Department of Health and Human Services, 2000). "Pain and suffering due to untreated dental disease can lead to problems in eating, speaking, and attending to learning" (U.S. Department of Health and Human Services, 2000). Dental disease in adults can lead to serious health conditions. In fact, over 164 million work hours a year are lost because of untreated dental disease (U.S. Department of Health and Human Services, 2000).

The aging of the population and the increased retention of teeth are also contributing to the growing demand for dental care (Douglass and Watson, 2002). However, as the U.S. population increases faster than the number of available dentists, there will be a decline in the supply of dental providers to meet the future demand for dental services (Douglass, 2003). The projected number of active dentists in 2020 is expected to drop 23 percent, from a high in 1987 (American Dental Education Association, 2002). There is already a geographic maldistribution of dentists that contributes to the problem of difficult access to care for those in need (American Dental Education Association, 2002). Further, the American Academy of Pediatric Dentistry conducted a 3-year study that concluded that there is an acute shortage of pediatric dentists to meet identified societal needs (Davis, 2000).

"A silent epidemic of oral diseases is affecting our most vulnerable citizens—poor children, the elderly, and many members of racial and ethnic groups" (U.S. Department of Health and Human Services, 2000).

Further exacerbating the shortage situation is the decline in the number of dental faculty (American Dental Association, 2002). Dental schools have a significant percentage of vacant faculty and few students in

the pipeline interested in academic careers (Haden, Weaver, et al., 2002). Currently, only 0.5 percent of dental school graduates intend to immediately enter academic careers (Haden, Catalanotto, et al., 2003). Meanwhile, the current dental faculty is aging, with 50 percent of full-time dental faculty age 50 or older (Haden, Weaver, et al., 2002). Without sufficient faculty, there cannot be new dentists prepared to meet the anticipated growing need for dental care.

The American Dental Association (ADA, 2002), the American Dental Education Association (ADEA, 2002), the American Academy of Pediatric Dentistry (AAPD, 2001), and the IOM (1995) have all addressed the future needs of the dental community. The reports concluded that dentists need to take a number of actions to meet the changing needs of the healthcare system, including the need to:

- **Increase exposure to underserved areas and populations.** Dental students need greater exposure to community-oriented settings and underserved populations to sensitize and encourage them to practice in these areas (Ryan, 2003). Research shows that graduates from families of low income, underprivileged backgrounds, or underrepresented minority backgrounds are more likely to serve the communities from which they came (Institute of Medicine, 2004). A recent report noted that if all dental school seniors spent 60 days working in patient-centered community sites, one million otherwise untreated patients would receive care (Ryan, 2003). General dentistry residency programs, serving as safety nets, are a major source of dental services to the underserved, and Title VII-funded pediatric dentistry training programs are successful in recruiting underrepresented minority dentists and in shaping their careers of service (Edelstein, 2003).
- **Increase diversity of dental care providers.** In 2000, only 10 percent of the dental students were African American or Hispanic, compared to 25 percent in the U.S. population (Brown, Schwartz, et al., 2000). Dental education has responded in partnership with the private sector to begin to address this concern. Without renewed emphasis, the current disproportion will only increase over time.
- **Focus on cultural competency.** Culturally competent dentists are increasingly needed to meet the needs of a growing and diverse population.
- **Utilize collaborative and interdisciplinary approaches to create a link between oral health and overall health.** Dental professionals must build collaborative and interdisciplinary methods with traditional and non-traditional professionals of oral healthcare, including non-dental primary care providers. Recent studies have shown that pediatric primary medical providers are interested in oral health but lack the requisite knowledge (American Academy of Pediatric Dentistry, 2001). The integration of oral health into general health holds great promise for addressing inequities and disparities in preventing oral diseases and promoting oral health.
- **Enhance communication and collaboration with patients.** Greater communication and collaboration with patients are vital to increase quality of care.
- **Utilize new technologies.** New technologies hold promise for improving patient communication and record keeping and for disseminating information more efficiently. However, challenges remain about how to integrate new and better technologies into practice. Increased informatics and computer-assisted technologies for diagnosis and treatment will increase efficiencies, but greater training and practice will be needed to ensure appropriate utilization of these resources.
- **Increase emphasis on community-oriented issues.** Dental schools are beginning to provide their students the didactic and clinical exposure to public health issues and community practice. Further efforts are needed to sensitize and encourage students to practice in underserved areas and to participate in outreach programs.
- **Broaden support for dentistry.** General and pediatric dentistry programs need to be able to compete for funding for academic units, faculty development, and predoctoral training as well as for general and pediatric dental residency support. Current statutory language does not allow general and pediatric dentistry to compete for these categories of support. This statute needs to be amended to make general and pediatric dentistry eligible for such support.

COMMON THEMES IN PRIMARY CARE MEDICINE AND DENTISTRY DISCIPLINES

Several common themes emerged from the recommendations of the specific primary care disciplines. These common themes centered on the need to increase the use of information technology, the

need to increase work in interdisciplinary teams, and the need to provide more patient-centered, community-based care. More specifically, primary care providers need to:

- **Increase their use of information technology** as a tool for the following: storing patient data, communicating with patients and other providers, aiding evidence-based practice, coordinating and assuring quality care, and educating patients and communities.
- **Increase interdisciplinary team care** with a focus on chronic disease management, patient safety, and quality care.
- **Provide patient-centered, community-oriented care** in the context of patients' personal background and that of the community, with particular attention to emerging population health needs.

Increased Use of Information Technology

The surge of information technology represents a significant opportunity for primary care medicine and dentistry to improve both access and quality of care for their patients. It is anticipated that information technology will transform primary care practice by:

- Enhancing communication between providers and their patients.
- Improving communication and collaboration among providers.
- Integrating, and providing quick access to, patient information.
- Empowering consumers and communities as partners in their own care.
- Providing immediate access to medical information through the use of interactive knowledge-based systems.

Electronic medical records (EMRs) are expected to be central to the role of a primary care provider, as they involve integrating information across specialties and coordinating care in a central location. EMRs that interface with laboratories, x-ray departments, hospitals, specialists, and pharmacies offer the promise of greater accessibility, integration, and accuracy of information about individual patients (Bodenheimer and Grumbach, 2003). Research has shown that EMRs reduce administrative burden, increase provider communication and collaboration, and improve quality of care (Bodenheimer and Grumbach, 2003).

Secure clinical e-mail and e-prescribing will also transform the workplace, increasing and expediting both provider-to-provider and provider-to-patient communication. Access to reliable information on the Internet through PDAs and pocket personal computers provides enormous opportunities to improve patient care.

Information technology can also reduce barriers to access and increase service in underserved and remote areas by (1) providing remote physician supervision for PAs and (2) linking primary care physicians to other health professionals. Solo providers also can increase their capacity to network with other health professionals. Small practices increasingly have the ability to connect to larger systems to track clinical information, provide feedback loops, and provide quality care.

Because of the easy access and availability of Internet information, patients are becoming increasingly educated in their own healthcare. It is anticipated that patients will increasingly direct their own care and manage problems with the aid of electronic information sources. In addition, the Internet allows patients to network together in support groups (such as chat rooms) and to share information. Providers will increasingly be called on to support learning, provide information, and identify areas for patient education and treatment. Educating and guiding patients will increasingly become the norm for primary care providers. However, concerns remain about the potential of the Internet to exacerbate already existing health disparities because of socioeconomic inequalities in Internet access (Bodenheimer and Grumbach, 2003).

"The wise use of information technology has the potential to improve the quality and safety of health care while at the same time enhancing access and reducing wasted, unnecessary delays, and administrative costs" (Institute of Medicine, 2002b).

Information technology will change both practice modes and relationships. Primary care providers will need to become not merely competent, but facile in using these new technologies, be it patient databases, prescription drug data systems, or diagnostic inquiry tools. The IOM reports that a major challenge in transitioning the healthcare system is preparing the workforce to acquire new skills and adapt to new ways of relating to patients and each other (Institute of Medicine, 2001). To achieve this goal, providers will need to be educated in the use of these new technologies, be able to integrate them into their practices, and be

able to educate an increasingly computer-literate patient clientele.

Interdisciplinary Teams: Management, Patient Safety, and Quality of Care

Collaboration among healthcare providers has been shown to have a significant effect on reducing errors and increasing patient safety and quality of care (Institute of Medicine, 1999). Errors in patient care have been shown to be related to inadequate accountability and coordination among different healthcare providers (Institute of Medicine, 1999). As a result, the IOM has recommended greater integration and interdisciplinary activities as one aspect of helping to eliminate patient errors and improve quality of care (Institute of Medicine, 1999).

“All health professionals should be educated to deliver patient centered care as members of an interdisciplinary team, emphasizing evidence based practice, quality improvement approaches and informatics” (Larsen, Kirk, et al., 2003).

Interdisciplinary teams help assure standardization in care, accountability, and improved coordination of care (Larsen, Kirk, et al., 2003). Studies have shown that generalists working in concert with specialists provide the best quality of care (Larsen, Kirk, et al., 2003). However, the ideal of an integrated health system, with specialist and generalist healthcare providers working together, requires a fundamental change in the healthcare system. This change begins with interdisciplinary teams learning to work together. As such, the primary care provider is the natural cornerstone of this collaborative treatment process.

“No one practitioner can be an expert in every field but, if properly trained, that provider can coordinate and lead the team to provide the highest quality of care possible to achieve the best outcome for the patient. The team also makes it possible for the primary care provider to meet the objectives of whole person care” (Safran, 2003).

The dental community, specifically, is rethinking how interdisciplinary team care can improve practice. An example is the integration of dental care into everyday medical practice, such as having pediatricians, and adult and geriatric healthcare providers, conduct oral cavity screenings during physical examinations. This type of integration of oral health into systematic, primary healthcare is expected to benefit all patients, especially

the traditionally underserved, who face significant access barriers to dental providers.

Primary care providers will need to be trained as team leaders, as integrated team care necessitates that providers adopt new ways of interacting with each other. Leadership skills in communication, organizational management, and team building must be taught.

Patient-Centered, Community-Oriented Care

It is critical that primary care providers move beyond the office into the communities that they serve. Studies have shown that the provision of clinical care is only one of several types of determinants of health, among which include genetic, behavioral, social, and environmental factors (Institute of Medicine, 2003).

In addition, the Nation is becoming more diverse, both ethnically and culturally (Ambrose, 2003; Brach and Fraser, 2002; U.S. Census Bureau, 2000). Large communities with special health, linguistic, and cultural needs are increasingly without access to care or subject to disparities in care. Community-based, public health-focused, culturally effective care has the greatest capacity to improve health outcomes for our Nation’s growing minority population.

“The health care worker needs to be a part of the community and engage within the community to understand better the needs of the community . . . to become a lifelong partner within the community” (Pamies, 2004).

Primary care providers are also increasingly on the front line responding to emergencies and ongoing public health challenges (Advisory Committee on Training in Primary Care Medicine and Dentistry, 2002). The threats to entire populations, ranging from environmental challenges to potential biological threats of terror, have only heightened the need. In FY 2003, the Department of Health and Human Services spent \$3.5 billion to improve the capacity of our public health system to respond to public health emergencies. It is critical that such efforts be bolstered by providing our healthcare providers with both community-based education and practice to ensure their readiness and aptitude to work competently and efficiently with State and local public health officials in response to emerging healthcare threats.

Building a community-based infrastructure of care will require a body of students prepared, educated, and interested in practicing in communities. Introducing students to community-based care can seed a lifelong

interest and commitment for students and trainees (Slack, Cummings, et al., 2002). As such, introduction to community outreach programs is critical for inspiring and recruiting future professionals needed at the community level. Studies have established that physicians' sense of preparedness is a major predictor of their retention duration (Fink, Phillips, et al., 2003; Colwill and Cultice, 2003; Slack, Cummings, et al., 2002). Placing primary care providers in the community can change health behavior in addition to inspiring a pipeline of youth to move toward a medical career and supporting providers interested in serving in underserved communities.

Community-oriented care has the capacity to improve not only quality of care, but also quality of life. Primary care providers of the future will need substantial skills to provide community responsive, culturally effective care. They will be expected to understand and apply public skills in leadership and education. They will also be expected to provide culturally effective care to various diverse communities, to be able to communicate effectively, and to interact competently with public health and policy-making bodies.

THE FUTURE ROLE OF TITLE VII, SECTION 747 IN PRIMARY CARE MEDICINE AND DENTISTRY

The trend toward increasing the quality of the Nation's healthcare is unmistakable. In the landmark *Crossing the Quality Chasm, A New Health System for the 21st Century* report (Institute of Medicine, 2001), the IOM defined the framework for the healthcare system of the 21st century as **safe, effective, patient centered, timely, efficient, and equitable**. Each primary care discipline independently recognized the importance of quality of care in its reports, along with a great potential for improvements in future care.

New training programs recognizing the varied skills that primary care providers must have to care for their patients in the upcoming years must be developed. Specialized and innovative curricula are necessary to train primary care providers to utilize medical information technology, to manage and interact in interdisciplinary teams, and to provide community-based care.

Title VII, section 747's innovative education and training programs are uniquely positioned to prepare our Nation's primary care providers to meet these future needs. HRSA's BHPPr administers these grant programs.

Title VII, section 747 programs can provide key support to train faculty and students in how to change practice and enhance the efficiency and quality of care. There is currently a broad lack of training in medical and dental curricula on information technology and how to use it in practice. Training in information technology is critical to future primary care providers.

Title VII, section 747 programs can provide the essential foundation to increase integrated team care models and collaborative relationships among the different disciplines. Providers trained in these innovative systems learn to expect quality-focused team work. Once in practice, these providers will become trainers to others, teaching them how to use interdisciplinary methods to improve their performance and quality of care. Title VII, section 747 can also provide the critical support needed to train faculty in team leadership and management and in the use of integrated care models to improve quality of care.

Title VII, section 747 programs are critical in building and supporting infrastructures for programs that focus on community collaborations and outreach. Title VII, section 747 programs provide a long-term commitment in communities. A structured curriculum of both education and practice must be used to prepare students for community interaction. These programs promote interdisciplinary community-based research and training, provide the skills to deliver culturally effective care, encourage community collaborations, and provide critical student exposure to community-oriented public health and policy-making entities. No other current Federal vehicle exists to create these types of curricular change.

CONCLUSION

Title VII, section 747 is the major vehicle for influencing the content and capacity of primary education and training in the United States. As such, it will be critical in revitalizing the training programs for primary care providers to recognize the varying skills they will need to care for their patients in the future. In support of the goals of HRSA and BHPPr, the Advisory Committee makes the following recommendations.

RECOMMENDATIONS

- 1. To prepare future primary healthcare providers with the training to meet the emerging challenges to the health of the public adequately, Title VII, section 747 grant**

programs require expanded financial resources. Specifically, Title VII, section 747 programs require a budget, at a minimum, of \$198 million to provide adequate funding to meet these critical healthcare needs.

Primary care providers play a critical role in the rapidly changing healthcare environment. The challenges to healthcare include demographic changes in the population, increased prevalence of chronic conditions, decreased access to care, a need for effective coordinated first response strategies, and a need for information technology to manage the rapid growth of medical information required to provide quality and effective healthcare services. Additional funding is essential to prepare current and future primary care providers to utilize healthcare information technology, to manage and interact in interdisciplinary teams, and to provide community-based care to meet the demands of a healthcare system undergoing remarkable transformation.

The President has made it a priority to add to and expand substantially the number of community health centers across the United States. The President has also expanded the National Health Service Corps and Federal student loan repayment and scholarship programs to help meet the staffing needs for these centers. However, without appropriate provider education and preparation, increased staffing alone will be insufficient to meet these increasing service goals. Specifically, Title VII, section 747 programs provide the critical means for training and successful placement, practice, and retention of health professionals at these sites. Such an expansion in community health workers will require a corresponding expansion in appropriate training to prepare them to meet the critical care needs of their patient population.

2. Title VII, section 747 training programs should develop and disseminate educational innovations in the use of information technology for quality care, prevention of medical errors, evidence-based practice, and patient and provider communication. Title VII, section 747 should encourage the development of training programs focused on increasing provider communication, evidence-based practice, and quality of care. Title VII, section 747 goals include the following:

- Develop programs and curricula to train medical and dental faculty in leadership skills as well as to provide training in emerging technologies.

Faculty should teach both technical and leadership skills with regard to the use of technologies. The emphasis should be on the potential of new technologies to increase patient- and provider-centered communication and assure quality of care.

- Develop training programs for state-of-the-art information technology-based systems. Pertinent technologies should include clinical e-mail, knowledge-based systems, and electronic medical records.
- Support programs designed to teach the use of information technology for quality measurement and evidence-based practice. Such programs should specifically address technological tools that facilitate continuing education and decision support to aid solo practitioners, rural practitioners, and others in isolated practice locations.
- Encourage training in the use of information technology to enhance communication among providers, particularly those in solo practices, rural practices, and other medically underserved areas. This training should emphasize the use of electronic medical records to integrate information among multiple providers.
- Encourage training in the use of applications to increase and enhance communication across healthcare disciplines and among providers of care. This training should emphasize the use of such technologies to decrease medical errors and increase quality and safety of care.
- Encourage training in applications that enhance communication with patients and that support patient self-care. Such training should include efforts to use technology to enhance communication with those in greatest need, thereby decreasing the “digital divide.”

3. Title VII, section 747 funding should support primary care medical and dental training programs that utilize integrated interdisciplinary team models and innovative healthcare designs. Title VII, section 747 should encourage the development of interdisciplinary models and training in integrative settings, including:

- Chronic care models providing interdisciplinary, patient-focused, approaches to care for patients with complex and chronic diseases or conditions.

- Quality improvement teams that work together across disciplines to identify opportunities to improve access to care, enhance quality of care, and reduce medical errors.
 - Community and population health models that assist providers in sharing information across a broad network for surveillance and early warning of emergency syndromes or emerging threats.
 - Collaborations and interdisciplinary partnerships between medical and dental providers.
4. **Title VII, section 747 funding should support primary care medical and dental faculty development programs that incorporate concepts and skills related to interdisciplinary practice models and innovative healthcare designs.** Title VII, section 747 should support faculty preparation in interdisciplinary practice models through didactic training and experience in settings using these models. Interdisciplinary models supported by faculty should be evidence-based, guided by best practices and outcomes.
 5. **Title VII, section 747-funded programs should ensure future primary care providers have the knowledge, skills, and competencies to deliver culturally effective and community-oriented care.** Title VII, section 747 programs should encourage the development of programs in cultural competency and community-oriented care as a required, integrated component of the training and professional development of healthcare providers. Title VII, section 747 should encourage the development of programs that provide preparation that reaches beyond the classroom to include such experiential learning as training and placement in community settings and active interaction with community groups and associations.
 6. **Title VII, section 747 programs should develop and support primary care educational infrastructures that focus on community collaboration and outreach.** Title VII, section 747 programs should encourage the development of broad-based, sustained, quality-focused community collaboration and outreach. Such programs should follow a participatory action research model in which the community defines the objectives of the collaboration and is an equal partner in defining its health priorities. These programs should focus on providing skills to enable healthcare providers to deliver culturally effective care to diverse populations, enabling effective communication and outreach in community-based settings, including such non-traditional settings as schools, clubs, and houses of worship, and instilling the ability to interact effectively with local public health and policy-making bodies.
 7. **Title VII, section 747 programs should develop innovative educational strategies that address emerging population needs and scientific advances, such as patient safety, prevention, chronic disease management, elimination of health disparities, genomics, and first response strategies to public health hazards.** Primary care practice will play a critical role in responding to rapid changes in population needs, quality of care issues, and community-oriented collaborations. Title VII, section 747 programs should support the development of innovative models and approaches to anticipate these needs and should prepare providers to monitor and adapt to such changes.

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