

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

***THE ROLE OF TITLE VII, SECTION 747  
IN PREPARING PRIMARY CARE  
PRACTITIONERS TO CARE FOR THE  
UNDERSERVED AND OTHER HIGH-RISK  
GROUPS AND VULNERABLE POPULATIONS***

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

**November 2006**



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

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# ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

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

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

Congress created the Advisory Committee to obtain insight and objectives from primary healthcare providers, educators, and trainees who work on the front line. The members 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.

## ADVISORY COMMITTEE MEMBERS

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Chair  
Department of Family and Community Medicine  
College of Osteopathic Medicine  
Michigan State University  
East Lansing, Michigan

### **David P. Asprey, Ph.D., PA-C**

Associate Professor  
Physician Assistant Program  
College of Medicine  
University of Iowa  
Iowa City, Iowa

### **Tammy L. Born, D.O.**

Private Practice Family Physician  
Born Preventive Health Care Clinic  
Grand Rapids, Michigan

### **Rodolfo R. Burquez, D.D.S.**

Private Practice Dentist  
Rodolfo R. Burquez, D.D.S., Inc.  
Whittier, California

### **Diego Chaves-Gnecco, M.S., M.P.H.**

Child Development and Behavioral Pediatrics Fellow  
Programa SALUD PARA NIÑOS  
Children's Hospital  
Pittsburgh, Pennsylvania

### **Tina Lee Cheng, M.D., M.P.H.**

Chief  
Division of General Pediatrics and Adolescent  
Medicine  
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Baltimore, Maryland

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Associate Dean for Primary Care and Rural Health  
School of Medicine  
University of Alabama  
Birmingham, Alabama

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Professor and Chair  
Department of Family and Community Medicine  
Medical College of Wisconsin  
Milwaukee, Wisconsin

### **Sanford J. Fenton, D.D.S., M.D.S., Vice Chair**

Professor and Chair  
Department of Pediatric Dentistry and Community  
Oral Health  
University of Tennessee  
Memphis, Tennessee

### **Katherine A. Flores, M.D.**

Director  
UCSF Latino Center for Medical Education and  
Research  
University of California, San Francisco School of  
Medicine/  
Fresno Medical Education Program  
Fresno, California

**Charles H. Griffith III, M.D., M.S.P.H.**

Associate Professor of Medicine  
Associate Professor of Pediatrics  
University of Kentucky Medical Center  
Lexington, Kentucky

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Pearland, Texas

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Family Practice Physician  
Eden Valley Institute  
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Family Practice Physician  
Prime Care – Family Practice, P.C.  
Colonial Heights, Virginia

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Physician Assistant Division  
Duke University  
Durham, North Carolina

**Man Wai Ng, D.D.S., M.P.H.**

Dentist-in-Chief and Chair  
Department of Dentistry  
Children's Hospital Boston  
Boston, Massachusetts

**Lauren L. Patton, D.D.S.**

Professor and Director  
General Practice Residency Program  
University of North Carolina  
Chapel Hill, North Carolina

**Joseph L. Price, Ph.D.**

Coordinator, Behavioral Medicine Program  
Family Medicine of Southwest Washington  
Southwest Washington Medical Center  
Vancouver, Washington

**Eugene C. Rich, M.D.**

Tenet Professor and Chair  
Department of Medicine  
Creighton University School of Medicine  
Omaha, Nebraska

**Raymond J. Tseng, D.D.S., Ph.D.**

Resident  
Department of Pediatric Dentistry  
University of North Carolina  
Chapel Hill, North Carolina

**Surendra K. Varma, M.D.**

Professor and Vice Chair  
Department of Pediatrics  
Texas Tech University  
Lubbock, Texas

**STAFF, DIVISION OF MEDICINE AND  
DENTISTRY****BUREAU OF HEALTH PROFESSIONS, HRSA  
U.S. DEPARTMENT OF HEALTH AND HUMAN  
SERVICES****ROCKVILLE, MARYLAND**

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(DMD)

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Acting Deputy Director, DMD

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Acting Executive Secretary  
Advisory Committee on Training in Primary Care  
Medicine and Dentistry

Eva M. Stone  
Program Analyst and Committee Management  
Specialist

Anne F. Patterson  
Committee Management Assistant

**REPORT WRITING GROUP**

*Sanford J. Fenton, D.D.S., M.D.S. (Chair)*

*Katherine A. Flores, M.D. (Co-chair)*

*Perri Morgan, Ph.D., PA-C (Co-chair)*

Karen Ann Gunter, PA-C

Bonnie Head, M.D.

Lauren L. Patton, D.D.S.

Joseph L. Price, Ph.D.

Raymond J. Tseng, D.D.S., Ph.D.

Surendra K. Varma, M.D.



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## ABSTRACT

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**V**ulnerability is the increased susceptibility for poor medical, mental, and oral health outcomes. Vulnerable individuals and populations often have a greater risk for poor health outcomes than the general population because of the interplay of disparate health-care access; healthcare quality; and genetic, personal, behavioral, environmental, socioeconomic, and community risk factors. All of these factors can operate at the individual, family, community, and population levels.

Traditionally, healthcare providers have considered biomedical conditions as primary determinants of poor health. Since poor health along one dimension can be compounded by poor health along others, health needs are considerably greater for those with multiple health problems than for those with single health problems. Likewise, when non-biomedical health determinants converge in an individual, vulnerability may dramatically increase.

As our population, society, and environment change, so does the constellation of vulnerability factors that healthcare providers must be competent to address. The U.S. population has also significantly changed over recent years, including dramatic increases in racial and ethnic minorities and new immigrant groups, many of whom are non-English-speaking and with differing cultural beliefs; children living in poverty; and individuals who have no healthcare insurance or who are under-insured.

The Nation's 100 million persons from racial and ethnic minority groups are a critical vulnerable population. Persons from minority groups have well-documented barriers to essential healthcare services and suffer a great burden of preventable disease. These individuals must be the focus of healthcare, educational, and research initiatives to reduce unacceptable disparities. In particular, healthcare providers must develop the knowledge, skills, and competencies necessary to address this large vulnerable population. These goals are important in all programs that train medical and dental providers, but they are a special focus of programs for primary care physicians, physician assistants, and dentists who assume an even greater role in the care of vulnerable populations.

However, there are other groups of vulnerable populations who have, to date, been overlooked in discussions

about patients with special needs and greater risks of adverse outcomes. Advancements in medical technology and specific treatment interventions, for example, have significantly increased longevity for many persons with developmental disabilities. As a result, there is a growing population of adult patients with developmental and intellectual disabilities who are unable to find appropriate health and dental care providers experienced in caring for their special healthcare needs. Persons with intellectual and developmental disabilities are an emerging vulnerable population, as are prisoners and survivors of terrorism, war, and natural disasters. These groups must be added to the list of those with traditional risk factors, such as homelessness, substance abuse, mental illness, poverty, and poor access to healthcare.

Clinicians must develop an expanded set of clinical skills in order to address the complex problems of vulnerable patients. They must learn to identify factors that contribute to vulnerability and to work with patients and communities to bolster factors that promote good health. This work requires clinicians to be able to perform effectively across lines of difference in culture, class, race, and ethnicity, as well as with persons with intellectual and physical disabilities.

The Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) commissioned six experts to provide a detailed written description of vulnerability and vulnerable populations and the challenges facing an evolving healthcare system attempting to remedy identified disparities. These six papers, found in Appendices A through F of this report, highlight a multi-factorial approach to defining vulnerable populations and individuals in the United States. At the same time, the papers provide a guide for interdisciplinary workforce approaches and clinical innovations and training competencies through Title VII, section 747 programs directed toward this ever-changing epidemiology among the Nation's citizens.

The U.S. Department of Health and Human Services should promote educational programs for primary care dentists, physicians, and physician assistants that contribute to the development of these competencies and clinical innovations in caring for vulnerable populations.

## CONCLUSION

Vulnerability is the increased susceptibility for poor medical, mental, and oral health outcomes that is influenced by conditions such as disparate healthcare access; healthcare quality; and genetic, personal, behavioral, environmental, socioeconomic, and community risk factors. Current educational training available in the Nation's medical and dental schools and residency programs does not adequately train students to be competent to provide comprehensive and preventive healthcare for the Nation's most vulnerable populations. Title VII, section 747 programs are uniquely positioned to provide the leadership to change a healthcare system that has often neglected its most vulnerable citizens. Adoption of the recommendations in this report will significantly expand healthcare services to all vulnerable individuals, including those with special health needs.

## RECOMMENDATIONS

Consistent with its stated purpose:

***To educate and train physicians, pediatric and general dentists, and physician assistants to enhance the quality, capacity, and diversity of the Nation's primary care workforce, giving special consideration to the healthcare needs of underserved populations and other high-risk groups.***

The Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) recommends the following:

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

tion and an appropriation at a minimum level of \$215 million.

2. The Title VII, section 747 grant program should address the identified curricular and clinical instruction inadequacies relating to the management of vulnerable and high-risk individuals in the Nation's medical and dental predoctoral and postgraduate training programs.
3. In order to address health disparities as outlined in *Healthy People 2010*, the recruitment, education, and training of a larger and more diverse primary care workforce of physicians, physician assistants, and pediatric and general dentists are necessary to address the Nation's critical healthcare needs, specifically those of vulnerable individuals and populations.
4. The Title VII, section 747 grant program should encourage the educational accreditation, licensure, and certification organizations for physicians, physician assistants, and general and pediatric dentists to mandate policies and procedures that ensure that the healthcare workforce is prepared to provide competent care to vulnerable individuals and populations.
5. The Title VII, section 747 grant program should review and expand the definition of underserved and high-risk populations to include all aspects of vulnerability. Title VII, section 747 proposals that address primary care education and training to serve vulnerable populations should be prioritized. The Title VII, section 747 grant program should encourage programs to provide their trainees with the means to know the basic demographics about their patient populations and to understand the implications for the care of those patients.

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# THE ROLE OF TITLE VII, SECTION 747 IN PREPARING PRIMARY CARE PRACTITIONERS TO CARE FOR THE UNDERSERVED AND OTHER HIGH-RISK GROUPS AND VULNERABLE POPULATIONS

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## INTRODUCTION

Vulnerability is the increased susceptibility to poor medical, mental, and oral health outcomes. Vulnerable individuals and populations have 1) greater health needs; 2) more difficulty accessing appropriate care; and 3) even with care, suffer worse outcomes (Shi, 2005). Some persons are at increased risk for poor health outcomes because of the interplay of disparate healthcare access; healthcare quality; and genetic, personal, behavioral, environmental, socioeconomic, and community risk factors. All of these factors can operate at the individual, family, community, and population levels.

Traditionally, healthcare providers have considered biomedical conditions as primary determinants of poor health. Since poor health along one dimension can be compounded by poor health along others, health needs are considerably greater for those with multiple health problems than for those with single health problems. Likewise, when non-biomedical health determinants converge in an individual, vulnerability may dramatically increase.

As our population, society, and environment change, so does the constellation of vulnerability factors that healthcare providers must be competent to address. For example, primary care for children with chronic medical problems requires different skills from well child care. With the rising prevalence of chronic illness in the pediatric population, primary care will increasingly mean providing services for children with chronic disorders and complex medical needs in local community settings (Wise, 2005).

The U.S. population has significantly changed over recent years, including increases in racial and ethnic minorities and new immigrant groups, many of whom are non-English-speaking and with unique cultural beliefs; children living in poverty; and individuals who have no healthcare insurance or who are underinsured. The number of elderly individuals, particularly those over 85 years of age, has significantly increased, and many fragile elderly are not mobile enough to present for regular

care (Lurie, 2005). (See sidebar on page 2: “Assessing Vulnerability at the Community Level” (Frey, Pandhi, et al., 2005—now Appendix B in this document)).

Advancements in medical technology and specific treatment interventions have increased longevity for many persons with developmental disabilities. As a result, there is a growing population of adult patients with developmental and intellectual disabilities who are unable to find appropriate health and dental care providers with the expertise to care for their special healthcare needs. Persons with intellectual and developmental disabilities are an emerging vulnerable population, as are prisoners and survivors of terrorism, war, and natural disasters. These groups must be added to the list of those with traditional risk factors, such as homelessness, substance abuse, mental illness, poverty, and poor access to healthcare.

Vulnerability is dynamic; the aftermath of the Gulf Coast hurricanes of 2005 demonstrated that environmental and geographic conditions can rapidly create vulnerable populations (Frey, Pandhi, et al., 2005; see Appendix B). Some persons who were vulnerable in the days after the hurricanes remain so, while others are again robust. Individuals and communities also possess factors that confer resiliency. The resilience created by these factors can offset some of the contributors to vulnerability. (See sidebar on page 4: “The Gulf Coast Hurricanes of 2005” (Frey, Pandhi, et al., 2005; see Appendix B also)).

Clinicians must develop an expanded set of clinical skills in order to address the complex problems of vulnerable patients. They must learn to identify factors that contribute to vulnerability and to work with patients and communities to bolster factors that promote resiliency. This work requires clinicians to be able to perform effectively across lines of difference in culture, class, race, and ethnicity, as well as with persons with intellectual and physical disabilities.

The U.S. Department of Health and Human Services (HHS) should promote educational programs that contribute to the development of these competencies in

caring for vulnerable populations among primary care dentists, physicians, and physician assistants. Toward this end, faculty must be prepared to teach and model appropriate assessment and care of vulnerable patients. Training institutions should undertake faculty development initiatives, design model curricula, and implement educational programs on caring for vulnerable patients and populations.

The Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) commissioned six experts to provide a detailed written description of vulnerability and vulnerable populations and the challenges facing an evolving healthcare system attempting to remedy the identified disparities. These six papers can be found in Appendices A through F of this report.

## CURRENT STATUS

Historically, Title VII, section 747 programs have played a significant role in helping to train future primary care medicine and dentistry professionals who are capable of responding to changing demands and emerging healthcare needs of the U.S. population. This training has included addressing the health outcome disparities in underserved, high-risk, vulnerable groups such as the elderly, individuals with HIV/AIDS, substance abusers, the homeless, racial and ethnic minorities, economically and/or educationally disadvantaged, and other individuals with special health needs (ACTPCMD, 2005).

Recent information requested by ACTPCMD of Title VII, section 747 grantee programs, and received from

### ***Assessing Vulnerability at the Community Level***

New Mexico is one of the poorest states in the United States and has many of the worst health-related outcomes. As a largely rural state, New Mexico has issues of access to care that are compounded by the very high levels of uninsured and Medicaid recipients in the state. Rio Arriba County, one of the most rural counties in New Mexico, has an all-cause mortality rate of two and a half times that of the rest of the state. Between 1990 and 2000, death from accidents was over three times, and death from motor vehicle accidents was four times that of the state as a whole.

Rio Arriba County, like many rural counties in the United States, has few jobs available beyond agriculture or farming and related services. Citizens are forced to drive long distances for almost any job.

Factors that increase this county's vulnerability largely come from low levels of human capital, with high levels of alcohol and drug abuse also being factors and consequences of the problem. Forty-three percent of children in the county have had their first drink of alcohol by age 12, and 40 percent of students in grades 9–12 have participated in binge drinking in the previous 30 days (New Mexico Department of Health, 2003). In a county with a high level of poverty and inadequate housing, the educational level of citizens is particularly low and the educational system significantly challenged. The majority of the primary and secondary schools in the county are on the state watch list for low performance. Attendance at schools is low, and the drop-out rate for Rio Arriba County is one of the highest in the United States.

The county, particularly the youth in the county, suffers from low resiliency factors that, if higher, could increase human capital. County youth have lower levels in their families, schools, and communities of the setting of boundaries and expectations, and they report lower levels of a caring adult in the home or community. Positive peer influence, commitment to learning, life skills, and social competencies are all essential aspects of individual and group coping with the adversities of geography and poverty, but Rio Arriba County youth have significantly lower measures of resilience, compared to other youth in the state. Lack of resiliency relates to higher levels of smoking, alcohol and drug use, and drinking and driving.

The combination of low human capital—education, life skills, and resilience—and the geography and poverty that require driving long distances for work have created a culture of risk in Rio Arriba County that has a profound effect on the young people who live there.

131 responders, demonstrates that grantee programs serve these and other defined populations. Title VII, section 747 grantees were asked to describe what their programs were doing to prepare primary care practitioners to care for the underserved; other high-risk groups (defined as the elderly, individuals with HIV/AIDS, substance abusers, the homeless, and victims of domestic violence); and vulnerable populations (due to factors such as racial and ethnic minority status, economic and/or educational disadvantage, language barriers, poor health literacy, neurodevelopmental disorders, intellectual disabilities or mental illness, or other special health care needs). The percentage of total programs providing training for these underserved and other high-risk groups and vulnerable populations is as follows:

- Racial and ethnic minority status – 54.8%
- Economic and/or educational disadvantage – 53.1%
- Elderly – 43.5%
- Language barriers – 33.3%
- Intellectual disabilities or mental illness – 31.1%
- Individuals with HIV/AIDS – 29.4%
- Special healthcare needs – 28.2%
- Victims of domestic violence – 26.0%
- Substance abusers – 22.0%
- Homeless – 20.3%
- Poor health literacy – 16.4%
- Neurodevelopmental disorders – 7.9%

This information highlights that each category above is served by at least 20 percent of the programs, with the exception of those with poor health literacy and neurodevelopmental disorders.

Recent studies, however, have identified that certain high-risk groups that have been significantly overlooked, such as individuals with intellectual disabilities, mental illness, or neurodevelopmental disorders, continue to have difficulty accessing medically necessary comprehensive healthcare in their local communities because of an inadequate number of physicians and dentists trained to provide those needed services. For example, individuals with intellectual disabilities experience a higher prevalence of adverse conditions, inadequate attention to care needs, inadequate focus on health promotion, and inadequate access to quality healthcare services (Krahn, Hammond, et al., 2006). In addition, individuals with intellectual disabilities have four times more preventable mortality than the general population, suggesting that medical care may alter health outcomes for persons with intellectual disabilities (Horwitz, Kerker, et al., 2000).

As one example, an analysis of health data collected from 3,531 Special Olympian athletes in 2003 by Special Olympics International revealed the following findings: 1) 30 percent of the athletes reported never having received an eye exam; 2) only 32% of the athletes reported an awareness regarding sun protection needs; 3) 40 percent scored above normal on the Body Mass Index (BMI); 4) 50 percent of the athletes presented with one or more types of skin or nail conditions; 5) 32 percent did not pass the auditory pure tone test at the 2,000-Hz level; and 6) 53 percent of all athletes had obvious signs of gingival infection (Special Olympics, 2005).

The 2001 Surgeon General's Conference on Health Disparities and Mental Retardation concluded that insufficient didactic and clinical instruction in U.S. medical and dental predoctoral and postgraduate training programs was a significant cause of the health disparities identified for individuals with mental retardation. The subsequent report encouraged curricular changes in the Nation's professional schools and residency programs to address this problem (U.S. Public Health Service, 2002).

The American Academy of Developmental Medicine and Dentistry jointly with Special Olympics International examined the level of curriculum focused on the management of individuals with neurodevelopmental disorders and intellectual disabilities (ND/ID) using a survey instrument. The results of this study indicated that 52 percent of the medical school deans, 53 percent of dental school deans, 56 percent of students, and 32 percent of medical residency program directors responded that graduates were "not competent to treat people with neurodevelopmental disorders or intellectual disabilities." In addition, 58 percent of the medical school deans and 50 percent of the dental school deans reported that clinical training in managing individuals with ND/ID is not a high priority. Eighty-one percent of the medical school students reported not getting any clinical instruction in treating individuals with ND/ID, and 66 percent noted that they were not receiving adequate didactic instruction (Special Olympics, 2005). An earlier study reported that 60 percent of dental school deans cited "lack of curriculum time" and "lack of faculty expertise" for training deficiencies in the area of managing individuals with ND/ID. Fifty-one percent of the dental students noted that they did not receive any specialized clinical training, whereas 68 percent reported an inadequate level of didactic instruction regarding individuals with ND/ID (Wolff, Waldman, et al., 2004). Although physician assistant educators were not included in this survey, physician assistants compose an expanding sector of the U.S. healthcare

system and will require similar skills to provide care for persons with disabilities.

Encouraging signs for change, however, were identified. Nearly three-quarters of the medical and dental students surveyed reported an interest in treating people with intellectual disabilities as part of their professional career, whereas 100 percent of the medical school deans, 90 percent of the medical residency program

directors, 97 percent of the dental school deans, and 94 percent of the dental residency program directors indicated they would implement a specific curriculum regarding treatment for people with ND/ID in their facilities if one were provided to them (Special Olympics, 2005; Wolff, Waldman, et al., 2004).

Another major area leading to health disparities is race and ethnicity and socioeconomic status. A recent

## ***The Gulf Coast Hurricanes of 2005***

The differences in the ability of individuals to cope with the consequences of the hurricane that struck the U.S. Gulf Coast are a recent, highly visible example of vulnerability. Because of geographic factors, all those living in the area were vulnerable, but differences in levels of financial, human, and social capital for neighborhoods and individuals created very different levels of vulnerability.

Low-lying parts of New Orleans and surrounding areas were vulnerable, and water-retaining systems were in a state of disrepair. These conditions created an area of geographic risk. Many of the most severely affected populations in the Gulf Coast were at increased risk because they lived in areas with a high-density of non-permanent housing, such as trailer parks and housing lacking foundations.

Differential access to human resources was evidenced by the vivid racial inequality depicted in the aftermath of the flooding. Of those living in the most vulnerable geographic communities, most were African-American. The historic lack of access to higher quality housing in the African-American population compounded this problem.

Differential socioeconomic resource access also contributed to vulnerability, as some families and neighborhoods were less able to evacuate because of lack of public or private transportation. Low-income populations throughout the region also had difficulty accessing medical care because of the closing of healthcare facilities and the lack of portable health insurance coverage.

Finally, age and disability were factors for individuals vulnerable from other causes. Many of the deaths that took place after the initial storm were among elderly or disabled people who either could not or would not evacuate their homes or institutions. The loss of electricity and of access to medications or home health nursing had tremendous effects on an already-sick population with little reserve to deal with an overwhelming natural event.

Tracking the course of two hypothetical individuals with differential vulnerability may further elucidate individual aspects of vulnerability. Person A and Person B are both from similar racial backgrounds, achieved similar education, live in the same neighborhood, are employed, and do not own a car. Person A lacked a local social support system and remained in his house until he was evacuated after the flood. He now has an uncertain future in a new area of the country and is having difficulty finding employment. Person B had developed close friends through his workplace and was able to leave the area with a friend during the recommended evacuation period. His friend's family has helped him find a new job and a new home. Person B's increased social capital offset some of his vulnerability to this catastrophe.

In an examination of the Gulf Storm disaster, individuals and populations most affected suffered from a confluence of individual, geographic, community, age, racial, and health risk factors that produced terrible and divergent outcomes.

National Healthcare Disparities Report (Agency for Healthcare Research and Quality, 2006) noted that “disparities related to race, ethnicity, and socioeconomic status still pervade the American health care system. While varying in magnitude by condition and population, disparities are observed in almost all aspects of health care....” The report showed that minorities in 2004 rated their health status less positively than Whites, with 13.3 percent of Hispanics; 14.5 percent of African Americans, Non-Hispanics; and 16.5 percent of American Indians/Alaska Natives reporting fair or poor health status while only 8 percent of Whites/Non-Hispanics did so. The study compared minority groups to Whites on a number of quality care measures, finding that 53 percent of Hispanics, 43 percent of African Americans, and 38 percent of American Indians/Alaska Natives received worse care than Whites. In terms of access to care, 88 percent of Hispanics, 50 percent of African Americans, and 50 percent of American Indians/Alaska Natives had worse access to care than Whites. The study further examined the variable of “no usual source of health care” for adults between the ages 18 and 64 at various poverty levels. At less than 100% poverty, 39.8 percent of Hispanics had no usual source of health care as compared to 22.7 percent of Whites. Similar results were found for people between 100 percent and 200 percent poverty. At greater than 200 percent poverty, 22.7 percent of Hispanics had no usual source of health care while the figure for Whites was 12.4 percent. Disparities of health care are clearly related to race/ethnicity and poverty.

Title VII, section 747 training programs should continue their efforts to reduce healthcare disparities for all vulnerable high-risk groups through appropriate and innovative training, research, and service provision. In particular, programs should expand the scope of their didactic and clinical instruction to include growing vulnerable populations, spanning from groups that are well-recognized to those that have had less attention, including persons with neurodevelopmental disorders. Additional emphasis could be put on prevention and wellness through creative health literacy projects to significantly improve health outcomes and quality of life for all underserved high-risk populations and especially those individuals with ND/ID while further reducing the health disparities that currently exist. Health-promoting education programs, for example, could address smoking cessation, weight control, exercise and fitness regimens, safe sex practices, recognition of and intervention for alcohol and drug abuse, and early treatment for emerging mental illness.

## RECOMMENDATIONS

Consistent with its stated purpose:

***To educate and train physicians, pediatric and general dentists, and physician assistants to enhance the quality, capacity, and diversity of the Nation’s primary care workforce, giving special consideration to the healthcare needs of underserved populations and other high-risk groups.***

The Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) recommends the following:

**1. To prepare future primary healthcare providers with the training to meet the emerging challenges to the health of the public, the Title VII, section 747 grant program requires reauthorization and an appropriation at a minimum level of \$215 million.**

- **Rationale:** Title VII funds are essential to support major primary care training programs that train the providers who work with vulnerable populations. It is critical that funds not only be restored to 2005 levels, but that funding be increased, as the need for healthcare of the public, including those high-risk groups identified in this report, increases. It is critical that funds offset the acknowledged rate of inflation. This additional funding is also necessary to prepare current and future primary care providers for their critical role in responding to healthcare challenges including demographic changes in the population, increased prevalence of chronic conditions, decreased access to care, and a need for effective first-response strategies in instances of acts of terrorism or natural disasters.

**2. The Title VII, section 747 grant program should address the identified curricular and clinical instruction inadequacies relating to the management of vulnerable and high-risk individuals in the Nation’s medical and dental predoctoral and postgraduate training programs.**

- **Priority must be given to programs that develop and implement curricula to care for vulnerable patients and populations.**

- **Programs must develop faculty capable of teaching best practices for the care of vulnerable populations.**
- **Priority must be given to support innovative models of physician, physician assistant, and pediatric and general dental faculty development that enhance the quality and capacity for the effective and efficient delivery of primary healthcare for vulnerable populations.**
- **Rationale:** Current medical, physician assistant, and dental school faculty in many academic institutions do not have the necessary expertise and/or training materials to provide an adequate level of education and clinical exposure for their students and residents in the area of ND/ID or other high-risk groups. Title VII, section 747 training programs can serve as the training ground for future academicians with the clinical skills and professional judgment to reduce or eliminate these well-documented educational deficits. Eligibility for Title VII faculty development should be extended to include dental faculty.

Vulnerable, high-risk individuals often require an interdisciplinary approach to treatment because of the complexity of concomitant medical conditions, emotional and behavioral issues, and chronic disabilities. Title VII, section 747 programs are uniquely positioned to provide the impetus for best-practice changes to a health-care system that has often neglected its most vulnerable citizens.

**3. In order to address health disparities as outlined in *Healthy People 2010*, the recruitment, education, and training of a larger and more diverse primary care workforce of physicians, physician assistants, and pediatric and general dentists are necessary to address the Nation's critical healthcare needs, specifically those of vulnerable individuals and populations.**

- **Rationale:** As the demographic composition of the U.S. population changes, so should the demographics of trainees and faculty of training programs. Race and ethnicity remain intricately linked to vulnerability status in the United States. Racial and ethnic minorities tend to receive lower quality of healthcare than non-minorities, even when access-related factors such as patient insurance status and income are taken

into account. Cultural differences between providers and patients can affect provider-patient relationships and may contribute to disparities in quality of healthcare provided to racial and ethnic minorities (Pamies, 2005; Institute of Medicine, 2003).

As our country becomes more ethnically diverse, we need to train providers who are more reflective of the persons needing care in this new America. Since minority and immigrant populations bear a disproportionate share of disease burden and health risk, the healthcare needs of these populations exceed their proportionate representation in the U.S. population. At the same time, our health professional provider diversity remains low, with only 5 percent of dentists, 9.5 percent of physicians, and 11 percent of physician assistants identifying themselves as Hispanic or African American (U.S. Census Bureau, 2000; Pamies, 2005; American Academy of Physician Assistants, 2006). To address the disparity between the ethnic and racial diversity of the U.S. population needing care and the ethnic and racial diversity of the health workforce, Title VII funds should be used to support recruitment and retention of minority health and dental providers. This is the primary work of the Health Career Opportunities Program (HCOP; authorized in Title VII, section 739 of the Public Health Service Act [PHSA]) and the Centers of Excellence (COE; authorized in Title VII, section 736 of the PHSA). We strongly support adequate funding of these programs. It should be noted that Title VII, section 747 has supported increased diversity of the healthcare workforce and that many of our programs work in collaboration with the HCOP and COE programs.

Dower et al. published a report, entitled "From Affirmative Action to Health" in 1999, which reviewed the literature regarding the impact of affirmative action and the health status of communities. One of the findings was that the literature supports "a positive relationship between health professions diversity and improved access to health care for traditionally underserved populations." In their study, Cantor et al. (1996) found that "minority and women physicians are much more likely to serve minority, poor, and Medicaid populations." Similarly, Moy and Bartman (1995) found that "nonwhite



physicians are more likely to care for minority, medically indigent, and sicker patients.”

In 1997, Xu et al. reported study results supporting the hypothesis that “underrepresented minority physicians are more likely to care for medically underserved patient populations.” The authors speculated that “underrepresented minority physicians are more willing to care for underserved patients because they are sensitive to the unmet needs of this population. Such an attitude, brought to medical school and reinforced by educational experiences, might lead to their ultimate decision to enter primary care and provide care to medically under-served patients. Conversely, underrepresented minority patients may prefer and seek out physicians of similar background.” Grumbach et al. (1999) reviewed surveys of medical school graduates conducted by the Association of American Medical Colleges in 1998. Fifty-eight percent of underrepresented minority graduates from California medical schools intended to practice in an underserved area, compared to 19 percent of non-Latino white graduates and 19 percent of other minority graduates.

In addition to insufficient numbers of minorities enrolled in the health professional schools, training of providers in cultural competency at these institutions is also lacking. According to recent studies, 9 percent of the Nation’s medical schools offer a course to address cultural competency, and fewer than half of the schools offer coursework in health disparities (Pena, Munoz, et al., 2003; Pamies, 2005; Betancourt, Green, et al., 2005). Title VII funds should support programs designed to improve cultural competency among medical and dental health providers so that these providers will be able to work effectively with a diverse population.

Vulnerable populations often have difficulty obtaining medical and dental care because of a variety of factors, including low socioeconomic status, lack of medical and dental insurance, and lack of providers trained to address their complex medical and social problems. As health provider shortages develop over the next decade, vulnerable populations will be disproportionately affected. Title VII should support the training of physicians, dentists, and physician assistants to prevent a shortage. In particular, Title VII should fund programs to train providers

with the inclination and skills to care for vulnerable populations.

Since team models of care may improve outcomes of care for persons with chronic diseases (Wagner, 2000), Title VII programs should educate providers to work in effective teams that optimally use the skills of various providers to extend care to underserved and vulnerable patients. Because the needs of vulnerable patients are multi-dimensional, they will be better addressed by a team of providers with a wide range of assessment and treatment skills.

**4. The Title VII, section 747 grant program should encourage the educational accreditation, licensure, and certification organizations for physicians, physician assistants, and general and pediatric dentists to mandate policies and procedures that ensure that the healthcare workforce is prepared to provide competent care to vulnerable individuals and populations.**

- **Rationale:** Good health is essential to ensuring quality of life for all American citizens, including those with special healthcare needs, and also for the strength of the Nation. Medical and dental trainees must be prepared to promote health across the full range of vulnerable populations.

Americans with intellectual disabilities and their families face significant obstacles in access to basic healthcare. One major barrier is the lack of healthcare providers with adequate training to treat persons with intellectual disabilities. In 2002, the Surgeon General’s Report on Health Disparities and Mental Retardation recommended the development and implementation of criteria for accreditation and certification of health professions schools and training programs, based on the inclusion of mental retardation in their curricula. As a result of the Surgeon General’s report and with the support of organized dentistry including the American Dental Association and the American Academy of Developmental Medicine and Dentistry, the Commission on Dental Accreditation (CODA) adopted new language in accreditation standards for predoctoral dental programs and dental hygiene programs. As of 2006, graduates of U.S. dental schools and dental hygiene programs must be competent in assessing the treatment needs of patients with special needs.

Other organizations responsible for granting accreditation, licensure, or certification should follow the lead of CODA in order to reduce the

healthcare disparities of individuals with intellectual disabilities and other vulnerable populations. The Title VII, section 747 programs are poised to help develop, implement, and advocate for the education and training of healthcare professionals to care for vulnerable populations. Furthermore, Title VII, section 747 programs can further serve as catalysts for the professional accreditation process regarding the management of individuals with special healthcare needs.

**5. The Title VII, section 747 grant program should review and expand the definition of underserved and high-risk populations to include all aspects of vulnerability. Title VII, section 747 proposals that address primary care education and training to serve vulnerable populations should be prioritized. The Title VII, section 747 grant program should encourage programs to provide their trainees with the means to know the basic demographics about their patient populations and to understand the implications for the care of those patients.**

- **Rationale:** In order to promote the health of our society, physician, physician assistant, and dental trainees must be prepared to assess vulnerability among patients and communities and provide competent care to vulnerable populations. These vulnerable populations include those who have been previously recognized, such as persons from racial and ethnic minorities, and those with mental illness, poor health literacy, low socioeconomic status, multiple chronic health problems, and poor access to care. In addition, the definition of vulnerable populations must be expanded to incorporate emerging high-risk groups such as victims of terrorism or natural disasters, prisoners, immigrants, and those with intellectual and developmental disabilities.

Currently, several high-risk vulnerable populations are not recognized as medically underserved populations by Federal agencies, although they actually could qualify for such a designation utilizing the current Health Resources and Services Administration (HRSA)

guidelines. These guidelines establish criteria for the Designation of Medically Underserved Populations (MUPs), based on the Index of Medical Underservice (IMU), published in the Federal Register on October 15, 1976, and provisions of Public Law 99-280 enacted in 1986. The IMU involves four variables: 1) the percentage of the population with incomes below the poverty level (V1); 2) the percentage of the population age 65 or over (V2); 3) the infant mortality rate for the population (V3); and 4) the ratio of primary care physicians per 1,000 of the population (V4). The IMU weighted-value scale ranges from 0 to 100, in which 0 represents a population completely underserved and 100 represents a population best served or least underserved. According to HRSA, a population is considered to be a MUP if it receives an IMU score of less than 62.0.

The HRSA formula for establishing the MUP designation involves the application of the IMU to data on an underserved population group within an area of residence to obtain a score for the targeted population group. Population groups requesting a MUP designation should be those with economic barriers (low-income or Medicaid-eligible populations) or with cultural and/or linguistic access barriers to primary medical care services (<http://bhpr.hrsa.gov/shortage/muaguide.htm>).

Although several studies, for example, have well-documented the inability of individuals with neurodevelopmental disorders and/or intellectual disabilities (ND/ID) to access necessary and appropriate medical and dental services, the current Federal definition of underserved populations does not recognize people with ND/ID as underserved. The American Academy of Developmental Medicine and Dentistry (AADMD) has calculated an IMU score for the ND/ID population based on the published criteria:

- **V1=5.6**  
Thirty-three percent of children and adults with intellectual disabilities live in poverty (Parish, 2003).
- **V2=19.8**  
Ten percent of the ND/ID population is over the age of 65 (Kochanek, Murphy, et al., 2004).

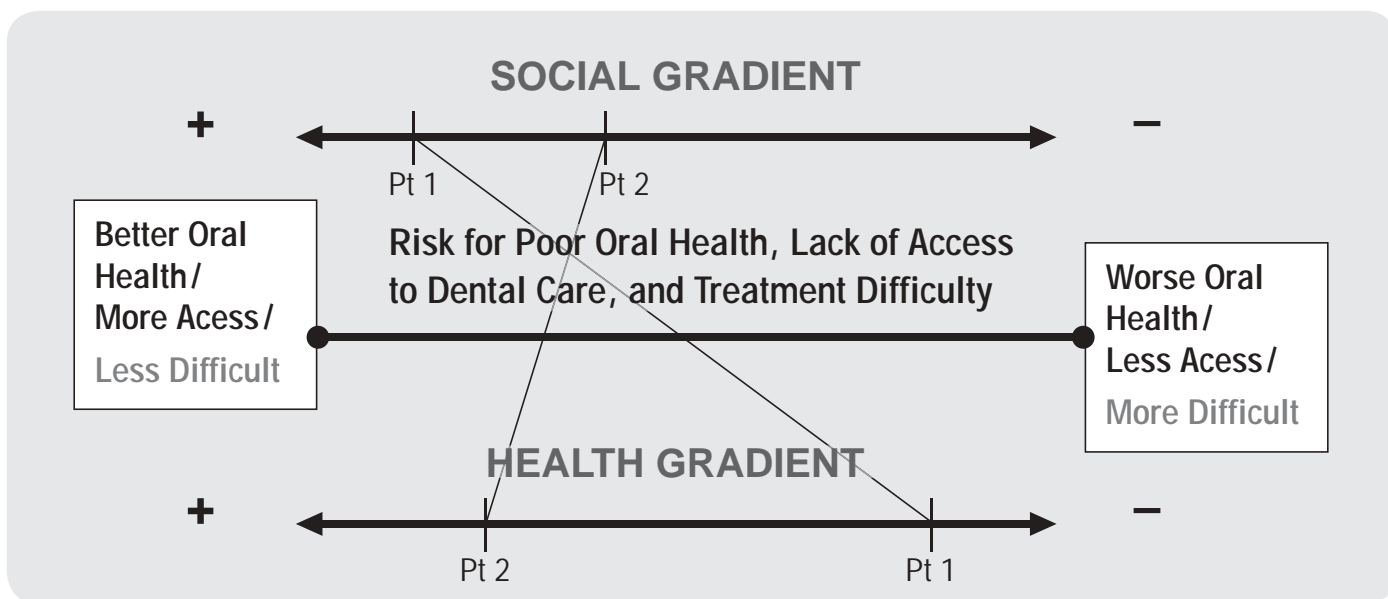
- **V3=0.0**  
 Infant mortality within this group is recorded as 47-94/1,000 (Kochanek, Murphy, et al., 2004).
- **V4=28.7**  
 The number of primary care physicians willing and capable of caring for the ND/ID population is very difficult to estimate, although anecdotally the presumed number is fairly low. By default, a V4 maximum score of 28.7 was utilized to calculate the IMU. Using the HRSA guidelines for establishing eligibility for a targeted MUP, the IMU score (V1+V2+V3+V4) for the ND/ID population would be equal to 54.1, which is less than the 62.0 score needed to determine eligibility. Recent graduates from medical and dental schools typically have student debt ranging from \$120,000 to over \$200,000. Designating individuals with ND/ID as a MUP would allow new physicians, physician assistants, and dentists who choose to provide healthcare services for a significant number of patients with ND/ID in their practices to apply for Federal student loan forgiveness, thereby potentially increasing the access to medically necessary services by this most vulnerable population and reducing the health disparity that currently exists.

Title VII, section 747 proposals that address primary care education and training to serve

vulnerable populations such as individuals with ND/ID should be prioritized. In this way, medical, physician assistant, and dental students who want to provide healthcare services to these high-risk populations can be given the necessary didactic and clinical instruction to assume this professional responsibility upon graduation.

Healthcare training programs must better prepare our students to understand the needs of the populations that they will serve. New providers should understand how to access and utilize resources available to them when they join a new community. Such resources would allow them to appreciate the demographics of that community and recognize the special needs which that particular community might have. After this assessment, providers can then determine how they can better provide services within each unique community, recognizing that each has diverse needs and issues.

Providers also need the tools to understand how to assess for a variety of vulnerabilities within their service population. Edelstein (2005) provides an oral health example that can be extrapolated to other types of healthcare. In the graphic below, Edelstein demonstrates how two dimensions relate to poor oral health and limited access to healthcare for vulnerable populations. The intersection of where an individual falls on a “gradient of social advantage/disadvantage” and where that individual falls on a gradient of “health advantage/disadvantage” designates a



resultant “treatment difficulty” level that is associated with lack of access to dental care.

This poor access results in part from a lack of competency and confidence of healthcare providers in treating vulnerable individuals.

The role of Title VII programs is to better position primary care providers to improve their competencies and confidence in working with and for vulnerable populations through appropriate training. Title VII programs should encourage the development of educational strategies designed to equip trainees with specific skills needed to assess aspects of vulnerability in patient populations. Medical, dental, and physician assistant training programs should incorporate a curriculum that teaches trainees about vulnerability, the complex interplay of multiple risks for vulnerability, and community vulnerability assessment.

## **CONCLUSION**

Vulnerability is the increased susceptibility for poor medical, mental, and oral health outcomes that is influenced by a plethora of possible circumstances or conditions such as disparate healthcare access; healthcare quality; and genetic, personal, behavioral, environmental, socioeconomic, and community risk factors. The current educational training available in the Nation’s medical and dental schools and residency programs does not adequately train students to be competent to provide comprehensive and preventive healthcare for the Nation’s most vulnerable populations and high-risk groups. Title VII, section 747 programs are uniquely positioned to provide the leadership to change a healthcare system that has often neglected its most vulnerable citizens. The Committee believes that adoption of the recommendations herein will facilitate these necessary changes and significantly expand healthcare services to all vulnerable individuals, including those with special needs.

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# ***APPENDICES***





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# APPENDIX A – VULNERABLE POPULATIONS IN THE UNITED STATES

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Leiyu Shi, Dr.P.H., M.B.A., M.P.A., Johns Hopkins University

## PART 1. A GENERAL FRAMEWORK TO STUDY VULNERABLE POPULATIONS

### INTRODUCTION

Webster’s dictionary defines “vulnerable” as “capable of being physically wounded” or “open to attack or damage.” In a broad medical sense, **vulnerability** denotes susceptibility to poor health. Research and policy regarding vulnerable populations typically focus on distinct subpopulations (Aday 1993a), including racial or ethnic minorities, the uninsured, children, the elderly, the poor, the chronically ill, the physically disabled or handicapped, the terminally ill, the mentally ill, persons with acquired immunodeficiency syndrome (AIDS), alcohol or substance abusers, homeless individuals, residents of rural areas, individuals who do not speak English or have other difficulties in communicating, and those who are poorly educated or illiterate, to name just a few.

For example, in *Healthy People 2000*, a U.S. national prevention strategy for significantly improving the health of the American people, vulnerable populations were identified as those with low income, disabilities, and minority groups (USDHHS 1991). The U.S. Federal government recently launched an initiative to eliminate racial and ethnic disparities in health, specifically, infant mortality, cancer screening and management, cardiovascular disease, diabetes, AIDS, and immunizations (USDHHS 1999; USDHHS 2000). Various terms have been used to describe these subpopulations including *disadvantaged*, *underprivileged*, *medically underserved*, *poverty-stricken*, *distressed populations*, and *the American underclasses*.

A closer examination reveals that these subpopulations share many common traits, and typically experience a convergence or interaction of multiple vulnerable characteristics or risk factors. For example, racial/ethnic minorities are disproportionately distributed at the lower end of the socioeconomic ladder, are more likely to be uninsured, and have poorer health than white Americans (AMA Council on Ethical and Judicial Affairs 1990; AMA Council on Scientific Affairs 1991; Kramarow et al 1999). The subpopulations identified as vulnerable

often lack the necessary physical capabilities, educational backgrounds, communicative skills, or financial resources to adequately safeguard their own health. They have also been shown to bear increased burdens of illness, have poorer access to health care, and receive health care of poorer quality. These commonalities call for a renewed conceptualization of vulnerability. The purpose of this section of the report is to introduce a **framework** to study vulnerable populations that reflects this convergence of vulnerable characteristics. The framework will serve as the core principle by which efforts to reducing disparities will be discussed in Part 2. For readers interested in the evidence of disparities using the framework, please refer to Shi and Stevens *Vulnerable Populations in America*. Before we present this new framework, we discuss why it is important to study vulnerable populations and then summarize the breadth of existing theories and conceptual models that have been developed to explain the poorer health and health care experiences of vulnerable populations.

### WHY STUDY VULNERABLE POPULATIONS

This report is about vulnerable populations, and we have chosen to particularly highlight those with minority racial/ethnic backgrounds, with low socioeconomic status, and those lacking health insurance coverage. There are many reasons to focus national attention (including health and social policy; social services; medical care; and medical, public health, and social welfare research) on the needs of vulnerable populations and reducing health and health care disparities experienced by these groups. We offer five reasons for enhancing the national focus on vulnerable populations: 1) vulnerable populations have greater health needs; 2) the prevalence of vulnerable groups in the population is increasing; 3) vulnerability is primarily a social issue: created through social forces and resolved through social (as opposed to individual) means; 4) vulnerability is intertwined with the

nation’s health and resources; and 5) there is a growing emphasis on **equity** in health.

## Greater Health Needs of Vulnerable Populations

Vulnerable populations are at substantially greater risk of poor physical, mental, and social health, and have much higher rates of morbidity and mortality. They experience much higher rates of asthma, higher rates of depression, and report more social exclusion than other groups. Despite these greater health needs, they also typically face greater barriers to accessing timely and needed care and, even when receiving care, have worse **health outcomes** than others. The magnitude and multifaceted nature of their health needs places a greater demand on medical care, public health, and related social and human services delivery sectors.

## Increasing Prevalence of Vulnerability in the U.S.

The U.S. has become increasingly multiethnic and by the middle of the 21st century the minority population is estimated to nearly equal the size of the non-Hispanic white population (DeVita and Pollard 1996). The national poverty rate too has only increased since reaching its low in the early 1970s, and the number of individuals in poverty continues to steadily increase with a particular sharp spike in the past 4 years (from about 31 million individuals in the U.S. to nearly 35 million since 1999 (Proctor and Dalaker 2003). Demographic and immigration shifts, and socioeconomic trends both in the U.S. and abroad, will likely result in vulnerable groups becoming the majority population within the 21st century. The health needs of these vulnerable populations will place an incredible strain on the capacity and resources of medical and social service to effectively ensure a national population with a high level of health and well-being.

## Vulnerability is Influenced and Remedied by Social Forces

Vulnerability to poor health does not represent a specific personal deficiency, but rather the interaction effects of many individual, community, and social or political factors, some of which individuals have little or no control over. This inherent aspect of how vulnerability is created implies that society, as a whole, has a responsibility to assist these populations and actively promote the health of these individuals. Many programs are in place to address specific health disparities. The most

effective approaches to mitigating the consequences of vulnerability, and reducing levels of vulnerability in the first place, must include broader health and social policies that address these social forces and ecological contexts.

## Vulnerability is Fundamentally Linked with National Resources

The well-being of vulnerable populations is closely intertwined with the overall health and resources of the nation. The U.S. continues to rank poorly compared to other nations on key national health indicators including infant mortality, mortality rates, and life expectancy. Poor health not only impacts individual families and lives, but detracts from national productivity and economic prosperity. The poor health experienced by vulnerable populations further subsumes national resources for social progress, when health and social conditions (such as violence)—that could have effectively been prevented—are left untreated, are exacerbated by neglect, and end up costing society billions more dollars in treatment than in prevention. Fundamental improvement of the nation’s health and resources cannot be accomplished without very specific efforts aimed at improving the health of vulnerable populations.

## Vulnerability and Equity Cannot Co-Exist

Perhaps the most important reason for focusing on vulnerable populations is the guiding principle of equity. “Equity” is defined by Webster’s dictionary as “the quality of being fair.” There are various ways in which “fairness” is conceptualized. For example, in terms of medical care, policies that assure equal access to health services, such as **universal health insurance** or health care programs such as the promotion of an Acquired Immunodeficiency Syndrome (AIDS) surveillance system, may benefit the public equally. Fairness, however, could also be defined in a relative way, such that the degree of access to health services is determined proportionately by the health needs of an individual or a population. Therefore, by this definition, an equitable health care system is one in which the health need of an individual is the sole determinant of his or her health care utilization. By either definition, if equity is a guiding principle for the U.S., then vulnerability cannot be allowed to persist.

Documents from the founding of our nation, in fact, identify equality as a governing principle in the U.S. The U.S. Declaration of Independence that was revealed in 1776 states, “We hold these truths to be self-evident,

that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.” These principles of equity, while pursued and interpreted in ways that are sometimes inconceivable today (e.g., slavery was looked at as an exception, declaring those who were slaves to be counted in the U.S. census for purposes of representation as “three-fifths of a human”), have at critical points in history been markedly important for vulnerable groups.

The final abolishment of slavery in 1865 marked, perhaps, the first national legislation reflecting the guiding principles of equality and directly changing the immediate status of this vulnerable population. Perhaps the second landmark legislation for vulnerable groups was the winning of women’s suffrage (or the right to vote) in 1920, giving women more, but still not fully equal opportunity for, political control in guiding the nation. While earlier public policy focused on equality in freedoms and political power, progressive policies in the 1960s enhanced racial, gender, and socioeconomic status equality in social and educational *opportunities* for U.S. citizens.

The Civil Rights Act of 1964, for example, made **discrimination** based on race, color, religion, and national origin illegal, and has been updated several times to include other specific discriminatory factors such as gender and sexual preference. The Johnson Administration’s War on Poverty during the 1960s further shifted public attention and social policies toward issues of social, educational, and health inequalities.

The past two decades have evolved to see a national and political interest in equality of *results attained* rather than just opportunity (Moss 2000). In the social and medical realms, the *Healthy People 2000* report explicitly identifies health and health care equity as a public health objective and has called for reduction in **health disparities** in the U.S. The Institute of Medicine, in its landmark report on “The Future of Public Health,” asserted that “...the ultimate responsibility for assuring equitable access to health care for all, through a combination of public and private sector action, rests with the Federal Government” (IOM 1988). Finally, a presidential initiative has also called for eliminating health disparities by the year 2010 (USDHHS 1999).

## CONCEPTUAL FRAMEWORK TO STUDY VULNERABILITY

Over the years, studies of vulnerable populations have used many different paradigms or models to ex-

amine why vulnerable groups experience poorer access to health care and poorer health status. Most of these models have focused mostly on single explanations and increasingly have begun to acknowledge the multifaceted nature of vulnerability. Many of the models have examined *individual-level* explanations for why vulnerability has negative influences on health. They highlight characteristics of individuals, their health-related behaviors, and their personal socioeconomic circumstances and health care access. Other models have suggested a broader *community-level* conceptualization of vulnerability, whereby individuals have poorer health due to community or social forces.

Each of the models reflects an evolution in defining, researching, and developing approaches to reducing or eliminating the health effects of vulnerability. Some of the more progressive models have recognized the overlap between individual and community level determinants of vulnerability, and others include the availability of medical care services as a predictor of vulnerability. The next evolutionary step that we propose requires a model that synthesizes previous work and recognizes the convergence of individual, social, community, and access to care risks that lead to vulnerability. We now turn to a discussion of this new model. We describe the overall model, its distinctive characteristics, and then discuss how the elements of the model can be operationalized and measured. We specifically describe how the model can enhance the study of vulnerable populations and we justify our main focus throughout the report on three main risk factors (race/ethnicity, socioeconomic status, and health insurance).

## The Vulnerability Model

Vulnerability, in our report, denotes susceptibility to poor health or illness. Poor health can be manifested physically, mentally, developmentally (e.g., language delays in children), or socially (e.g., poor job performance). Since poor health along one dimension can be compounded by poor health along others, the health needs are considerably greater for those with multiple health problems than for those with single health problems.

Vulnerability for poor health is determined by a convergence of predisposing, enabling, and need characteristics at both the individual and ecological levels. In laying out the now well-known access to care framework (Aday 1993b), Aday and Andersen have defined *predisposing* characteristics as those that describe the propensity of individuals to use services, which include basic demographic characteristics (e.g., age, sex, and family size), social structure variables (e.g.,

race/ethnicity, education, employment, and occupation), and health beliefs (e.g. beliefs about health and the value of health care). *Enabling* characteristics are the means that individuals have available to them for the use of services including resources specific to individuals and families (e.g., income and insurance coverage) and attributes of the community or region in which an individual lives (e.g., the availability of health care services). *Need* factors, as described above, specify illness or health needs that are the principal driving forces for receipt of health care.

These predisposing, enabling, and need characteristics converge and interact, and work to influence health care access, health care quality, and health status (e.g., morbidity and mortality). Translated into the terms of our vulnerability model, health needs directly imply vulnerability; predisposing characteristics indicate the propensity for vulnerability; and enabling characteristics reflect the resources available to overcome the consequences of vulnerability. Therefore, when examined in combination, individuals are most vulnerable if they have a combination of health needs, predisposing risk factors, and enabling risk factors. For example, individuals who have asthma (need factor), are Latino (predisposing factor), and lack health insurance (enabling factor) would be considered more vulnerable than individuals who have asthma alone.

In our model, we emphasize the importance of vulnerability determinants at community or ecological levels. This implies that vulnerability does not represent any personal deficiency of the populations defined as vulnerable, but rather that they experience the interaction many risks over which individuals have little or no control (Aday 1999). It also implies an important role for society in addressing the health and health care needs of vulnerable populations.

### **Distinctive Characteristics**

The vulnerability model presented above has a number of distinctive characteristics. First, it is a comprehensive model including both individual and ecological (contextual) attributes of risk. One's vulnerability status is determined not only by one's individual characteristics, but also by the environment in which one lives and the interactions among individual and environmental characteristics. Inclusion of ecological factors suggests that many attributes of vulnerability are beyond individuals' control and their reduction requires government and societal efforts. Compared to models that focus on individual characteristics, a multi-level model (including both individual and ecological elements) not only more

accurately reflects realities, but also avoids the tendency of "blaming the victims."

Second, this is a general model focusing on attributes of vulnerability for the total population rather than a specific model focusing on vulnerable traits of sub-populations. While we recognize individual differences in exposure to risks, we also think there are common, cross-cutting traits affecting all vulnerable populations. Because of current public funding options, a categorical approach to finding ways of assisting vulnerable sub-population groups will likely continue. We believe such an approach is piecemeal, inefficient, duplicative, and uncoordinated. It tackles symptoms rather than causes and is unlikely to fundamentally improve the situations of vulnerable populations. Our general model calls for a global and integrated approach that focuses on the most critical and common vulnerability traits in the community. Such a practice is more efficient and likely to bring more tangible improvement in the situations faced by vulnerable populations in the community.

Third, a major distinction of our model is the emphasis on the convergence of risk factors. The effects of experiencing multiple vulnerable traits may lead to cumulative vulnerability that is additive or even multiplicative. Individuals showing multiple vulnerability traits may have especially poor health status. Examining vulnerability as a multi-dimensional construct can also demonstrate gradient relationships between vulnerability status and outcomes of interest and thus improve our understanding of the patterns and factors related to the outcomes of interest. The findings are likely to be more precise and can provide better guidance to policymakers. For example, if we are able to demonstrate a gradient relationship between vulnerability status and health care access, quality, and health outcomes, our understanding of the patterns and factors in being vulnerable in the U.S. is enhanced and policymakers can thus use limited resources to target those groups that are most vulnerable.

### **Components of the Model**

Based on the overview presented above, we provide a graphical representation of our model of vulnerability and describe components of this model. Vulnerability is most closely impacted by individuals' predisposing, enabling, and need attributes, and also influenced these same risk factors at an ecological or community level. It is important to note that in our model, the predisposing, enabling, and need attributes are more than just risk factors for poor access, but also reflect risks for poor quality of health care and poor health status. These risk factors

then combine, interact, and work together, to create a level of vulnerability for each individual that is associated with negative health care access, quality of care, and health outcomes at individual or population levels. Slides 5 and 6 summarize measures of these attributes at the individual and community or population levels.

### **Individual Risk Factors**

Individual **PREDISPOSING ATTRIBUTES** in our model—reflecting risk factors for poor access to care, quality of care, and health status—include demographic factors, belief systems, and social structural variables that are associated with social position, access to financial and non-financial resources, and health behaviors that influence both health and health care access. These factors are also often foci for discrimination; patients may be discriminated against (intentionally or even unintentionally) by health care providers due to race/ethnicity, gender, sexual preference, or other factors. Individuals generally have relatively little control over most predisposing attributes.

Individual **ENABLING ATTRIBUTES** include socioeconomic status, financial and non-financial social resources, and factors (such as health insurance coverage) associated with the use of health care services. Perhaps the most commonly cited enabling risk factors are being low-income or lacking health insurance coverage. While low-income has some direct influences on health status that having health insurance does not, both risks do create substantial barriers to obtaining needed health care.

Low educational level and language barriers are also commonly cited as important risk factors for poor health care access, quality, and health status. Education directly impacts health (e.g., less educated individuals are more likely to smoke), but both low education and difficulty speaking English produce substantial barriers to appropriate health care (e.g., difficulty speaking with health care providers, communicating treatment preferences, reading health materials and prescription drug instructions, and following through on recommended treatments). Overall, enabling risk factors are generally more modifiable than predisposing factors (e.g., educational opportunities can be expanded through programs such as affirmative action).

Individual **NEED ATTRIBUTES** include self-perceived or professionally evaluated health status and quality of life indicators. Certain subpopulations are defined by their health (e.g., infants born low-birth weight, chronically ill or disabled individuals, persons with HIV/AIDS, mentally ill and disabled, alcohol or substance abusers, and those who were abused) (Aday 1993a; Aday 1999)

and have greater health care needs that contribute to vulnerability. For example, persons who are chronically ill or who have other functional disabilities (e.g., the frail elderly, or children with disabilities) may have particular difficulty obtaining needed health services due to special challenges created by their physical illness or mental condition (e.g., extensive reliance upon care-givers for accessing health care, or difficulty communicating health needs). Such individuals may be in need of highly specialized providers or even teams of providers, and access to these specialists is not always facilitated or well-coordinated by insurance plans.

In our model, the bidirectional arrows linking predisposing, enabling, and need attributes at both the individual and ecological levels indicate that these risk factors influence one another. For example, racial/ethnic minorities (a predisposing attribute) are disproportionately represented in the low socioeconomic status groups (an enabling attribute). Having health insurance (an enabling attribute) is less available to low-income groups (an enabling attribute) and is essential for assuring access to health care, particularly for subpopulations with chronic illnesses (a need attribute). Poorer health status (a need attribute) reduces the ability to maintain stable employment and earn income (an enabling attribute), and incomes are generally reduced for older individuals (a predisposing attribute) who are retired and may receive income only through the **social security** system.

Predisposing, enabling, and need attributes, in our model, each independently influences vulnerability status, as reflected by the three separate arrows. In addition, these three attributes converge and interact and jointly determine one's vulnerability status, as indicated by the larger bracket encompassing the three attributes. Indeed, the major difference between this framework and other models is the emphasis on the convergence of risks. Operationalizing vulnerability as a combination of disparate attributes is preferred to studying individual factors separately, since a population group that is considered more vulnerable rarely experiences only one particular risk and is more likely to have multiple risks.

### **Ecological Risk Factors**

Since individuals live in communities, they are clearly influenced by the environment around them. Our model further indicates that individual attributes of risk are influenced by ecological attributes of risk and that they combine to influence vulnerability. As with individual risks, there exist predisposing, enabling, and need risk factors at ecological levels.

Ecological **PREDISPOSING ATTRIBUTES** include neighborhood demographic composition; the physical environment; political, legal, and economic systems; and cultural/social norms and beliefs. Geographic areas composed of larger populations of older individuals or inner-city areas with a larger number of teenage mothers create greater vulnerability since they require a higher intensity of medical care, financial, and social resources. For example, the low-birth weight rate is higher among teenage mothers, and low-birth weight babies require much more intensive care, monitoring, and social assistance than other infants, which draws resources from other medical or social services for the community. Similarly, areas that are characterized by dilapidated housing or substandard public low-cost apartments have substantial health risks (e.g., lead poisoning from un-removed lead-based paint), and may offer inadequate safety protections (e.g., non-functioning smoke detectors, and dark and unmonitored halls). Social and political systems that tolerate high levels of health disparities (such as the U.S.) are also considered predisposing risks.

Ecological **ENABLING ATTRIBUTES** include socioeconomic position and social class in relation to others, workplace environments, social resources, and health care delivery system factors. For example, rural communities tend to have fewer economic opportunities, besides agriculture, and therefore tend to have higher rates of unemployment or employment in lower-wage sectors. Poor areas similarly tend to have fewer high-quality educational systems, since local taxes account for a substantial proportion of school system budgets and revenues generated through taxes are lower in low-income areas. These community socioeconomic status barriers also contribute to medical under-service, in part determining where health care providers will work (e.g., shortages are due to quality of living conditions and the lack of incentives for health care professionals to practice in these areas), and limiting health insurance coverage opportunities, since large companies that offer such coverage are generally not attracted to these areas.

Ecological **NEED ATTRIBUTES** include community health-risk factors (e.g., pollution levels), health-promoting community behaviors (e.g., health fairs and recreational opportunities), and trends in health status and health disparities. For example, rural areas and inner-city urban areas experience much higher population rates of asthma due to the presence of dust and pollution in the air that aggravates the lungs of potential asthmatics and increases the severity of conditions among those with asthma. Communities plagued with

crime and violence create unsafe living conditions for community members, increase the risk of personal injury from violence (more so for teenagers), and may sabotage community feelings of solidarity and degrade mental health.

Like individual attributes, ecological attributes also influence one another. For example, compared with other industrialized nations, the U.S. (a predisposing attribute) tolerates a higher level of disparities in income, education, access to health care (all enabling attributes), despite the fact that these socioeconomic and health care access disparities are causally linked to poor population health (a need attribute). Another example is that inadequate employment opportunities (an enabling attribute) may contribute to population health behaviors such as alcohol abuse (a need attribute) that are tolerated by a community based on cultural norms (a predisposing attribute) despite their contributing to neighborhood insecurity and levels of violence (a need attribute). Relationships such as these are demonstrated in the model with the bidirectional arrows, and their independent and combined relationships with individual risk factors and, ultimately, vulnerability are visible.

### ***The Consequences of Vulnerability***

Vulnerability has direct influences on health care access, health care quality, and health status measured at the individual and population levels. The right-side of our model depicts these likely consequences of vulnerability. Whereas the ultimate effect of vulnerability is related to declining health status, initial consequences may be observed in reduced access to health care and lower quality of care among those who are able to obtain access. Access can be measured by insurance coverage, having a usual source of care, and the use of preventive, acute, rehabilitative, and specialized care. Quality of care may be measured in many ways, including assessments of accessibility of providers or facilities, the quality of the interpersonal relationship with providers, the comprehensiveness of services, coordination of care among health providers, family-centered care and community-centeredness of care, and satisfaction with health status and health outcome measures represent a critical endpoint for assessing the influences of vulnerability. The World Health Organization (WHO) has defined **health** as a “state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO 1948; Hanlon and Pickett 1984). This definition recognizes that health is influenced by a combination of biological, social, individual, community, and economic factors. In addition to its intrinsic value, health is a means for personal and collective

advancement. It is not only an indicator of an individual's well-being, but a sign of success achieved by a society and its institutions of government in promoting well-being and human development.

While good or positive health is a major component of broad conceptual definitions of health, most commonly used indicators are actually measures of poor health (Wilson and Drury 1984; Bergner 1985; Dever 1984; USDHHS 1991; Rice 1991; McGinnis and Foege 1993). The major reason is that, historically, measurements of health status have been defined in terms of health problems such as disease, disability, and death.

Health status can be measured along physical, mental, or social (e.g., social functioning) dimensions for individuals, and similarly for populations. Individual physical health reflects symptoms, mortality, morbidity, and disability. Individual mental health reflects psychological states and health perceptions. Individual social health reflects social ties and resources. Although mental and social dimensions of health are less frequently measured, at least nationally, they are becoming widely recognized as important features of health status. Newer health status measures are capturing more of these domains.

Health problems all affect the length and/or quality of life. Longevity can be expressed in terms of life expectancy, mortality rates, number of deaths from specific causes, and other similar indicators. Quality of life measures encompass such factors as personal well-being, the ability to function independently, family circumstances, income, housing security, and job satisfaction. Economic consequences of ill health are reflected by the “burden of illness” that refers to both the direct and indirect economic costs associated with health care utilization and any functional restrictions imposed by illness.

### **Focus on Three Key Risk Factors: Race/Ethnicity, Socioeconomic Status, and Health Insurance**

Although there are many predisposing, enabling, and need attributes of vulnerability, this report primarily focuses on race and ethnicity, socioeconomic status, and health insurance coverage because they are three of the most powerful predictors of poor health care access and health and, therefore, vulnerability. These three factors are closely intertwined but exert independent effects on health. They are also indirectly associated with, or contribute to, other vulnerability traits.

**RACE/ETHNICITY** has long been a major basis of social stratification in the U.S. (Power and Matthews 1997). While race and ethnicity are closely associated with socioeconomic status and health insurance indicators, socioeconomic status is not entirely equivalent across racial/ethnic groups. For example, even within categories of socioeconomic status, racial/ethnic minorities often have higher rates of morbidity and mortality than whites. The failure of socioeconomic status to completely account for racial variations in health status emphasizes the need to give attention to the unique factors linking race and ethnicity with health. One of these is discrimination, which incorporates ideologies of superiority, negative attitudes and beliefs toward racial/ethnic minorities, and differential treatment of members of these groups by both individuals and societal institutions (Williams and Collins 1995). Because race/ethnicity and socioeconomic position in the U.S. are so closely intertwined, it is difficult to address socioeconomic or health insurance disparities without examining racial/ethnic disparities.

The relationship between **SOCIOECONOMIC STATUS** and health care access and quality of care, and health is quite well-known. Variations in income and wealth, educational attainment, and occupational position as markers of socioeconomic inequality have long been associated with variations in health status and mortality (Moss 2000; Kaplan et al 1996; Amick et al 1995). Persons with high income, education, or occupational status live longer and have lower rates of diseases than those with lower socioeconomic status. Socioeconomic status is also closely linked with health insurance status (due to health coverage provided primarily through employers in the U.S., and to income-based eligibility for safety-net insurance programs like Medicaid), but both have independent effects on health.

In the U.S., **HEALTH INSURANCE COVERAGE** has long been regarded as a marker for access. Recently, the Institute of Medicine (IOM) concluded that health insurance is also predictive of health outcomes. The IOM's Committee on the Consequences of Uninsurance concluded that providing health insurance to uninsured adults would result in improved health, including longer life expectancy. Increased health insurance coverage would especially contribute to improving the health of those in the poorest health and those who are most disadvantaged in terms of poor access to care and thus would likely reduce health disparities among racial and ethnic groups (IOM Committee on the Consequences of Uninsurance 2002).

The disparities in race/ethnicity, socioeconomic status, and health insurance in access to health care,

quality of care, and health status are well established. Therefore, timely and accurate knowledge of these three aspects of diverse vulnerable population groups is of critical importance in developing and assessing targeted interventions to reduce these disparities. Focusing on racial and ethnic, socioeconomic status, and health insurance disparities is also consistent with current and future national health policies. Healthy People 2010 focuses national attention on racial/ethnic and socioeconomic status disparities in health and health care and, in a bold step forward from Healthy People 2000, called for the elimination of disparities in health and health care access (USDHHS 2000).

The vast availability of health data according to race and ethnicity, socioeconomic status, and health insurance coverage also makes it easier to demonstrate the vulnerability status associated with these factors. National protocols have institutionalized the collection and reporting of health data according to these factors. For example, the Federal government's Office of Management and Budget requires that Federal agencies report health statistics for four race groups (American Indian/Alaskan Native, Asian and Pacific Islander, black, and white) and one ethnic category (Hispanic origin) (OMB 1978). Regarding socioeconomic status, in 1998, the U.S. Department of Health and Human Services issued its first annual report of *Health, United States, 1998* that included a special chart-book on socioeconomic status and health and later editions have continued to report health data using these characteristics of socioeconomic status. Finally, almost all major national health surveys now have included health insurance coverage data in addition to socioeconomic status and race/ethnicity.

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## PART 2. RESOLVING DISPARITIES IN THE U.S.

Inequalities in America are not surface deep, nor easily remedied, but it is our intent in this part to present a unifying solutions-focused framework for resolving these disparities. Guided by this framework, a specific course of action is proposed, accounting for practical challenges and barriers. Finally, we summarize implications for training primary care medicine and dentistry. For those interested in current public (Federal, State, and local) and private initiatives at addressing disparities, please refer to Shi and Stevens *Vulnerable Populations in America*.

### FRAMEWORK TO RESOLVE DISPARITIES

In support of the Healthy People initiative and other calls to arms for eliminating disparities, we propose a single unifying solutions-focused framework to improve the nation's health and resolve disparities for vulnerable populations. The framework focuses on both *social* and *medical* points of intervention to create a multi-faceted approach to reducing disparities in health and health care by race/ethnicity, socioeconomic status, and health insurance coverage. The framework is built upon the ballasts of both social and medical care determinants, because the combination of these factors ultimately shapes health and well-being. It should be noted that health, in this model, includes the positive concept of well-being and encompasses its physical, mental, and social components.<sup>1</sup>

#### Social and Medical Influences on Vulnerability

In this model, social determinants of vulnerability reflect personal and community-level influences including demographics, socioeconomic status factors, and aspects of social interactions. More specifically, these factors include race/ethnicity, socioeconomic status (such as income, education, and occupation), behavioral factors, and social interactions (e.g., social networks at the individual level and social cohesion at the community level) that influence health care access and health. Behavior, it should be noted, should not be isolated from the social and environmental contexts that influence what choices are available and made.

While social determinants influence the health and resources that patients bring to the health care system, the medical care system focuses primarily on treating

poor health. The framework includes a broad range of medical services and interventions to improve health, though some services (i.e., preventive and primary care) will contribute to general health status, while others will be more influential in end-of-life care and mortality (i.e., specialty and long-term care). Without access to medical care, individuals will have difficulty treating health problems, while patients who gain access and move across the spectrum will contend with issues continuity and insufficient coordination of care.

In considering solutions for health disparities, policy-makers should examine the balance of social and medical influences on vulnerability. While social factors are likely to have stronger influences on health than medical care (since medical care typically only intervenes once a problem is identified), there are extremely important roles for medical care in improving health, promoting well-being, enhancing quality of life, and ultimately lengthening life expectancy. In trying to solve health disparities, one should consider the respective contributions and likely effectiveness of social and medical interventions.

Since medical care absorbs such a large proportion of national spending, special consideration should be given to where resources are directed. Should equal investments be made in all health services, or are some investments better than others? Increasing resources for primary care, for example, may make basic health services available to more individuals but would reduce the availability of specialty care. Directing resources toward specialty care (i.e., higher technology services) may enhance care and extend life for people with more severe health conditions but would draw away resources from basic primary care services for all. Other considerations, such as the quality of care, and access to alternative therapies, may also impact health care experiences and health outcomes.

#### Social and Medical Points of Intervention

Considering that both social and medical determinants are responsive to numerous outside forces, our framework highlights many important intervention points. Reductions in health and health care disparities are obtainable through interventions at four levels: 1) policy interventions, 2) community-based interventions, 3) health care interventions, and 4) individual interventions. These general approaches are described below

and then used to organize our discussion of intervention strategies to address vulnerability.

- **Policy Interventions.** Social or public policy influences the health and health care of the population in many ways. Product safety regulations, screening food and water sources, and enforcing safe work environments are merely a few of the ways in which public policy directly guards the welfare of the nation. With fewer resources at their disposal, however, vulnerable populations are uniquely dependent upon social and public policy to develop and implement programs that address basic nutritional, safety, social, and health care needs. Many of the mechanisms relating vulnerable status to poor health are amenable to policy intervention, and policy initiatives can be primary prevention strategies to alter the fundamental dynamics linking social factors to poor health.
- **Community-based Interventions.** Disparities in health vary substantially at the community level, suggesting that some sources of health disparities may be addressed at the community level. Neighborhood poverty, the presence of local social resources, and societal cohesion and support are all likely to contribute to the level of health inequalities in a community. Strategies to be addressed have a renewed interest in tailoring interventions to address community health risks. Because community partnerships reflect the priorities of a local population and are managed by members of the community, they minimize cultural barriers and improve community buy-in to the program. Community-based strategies have the particular benefit of mobilizing resources at the local level to address these problems. Community resources can be applied directly to community members, providing businesses and other local organizations with greater incentives to contribute to local health causes. Community approaches also benefit from *community participatory decision making*, where local researchers, practitioners, social services, businesses, and community members are invited to contribute to the process of designing, implementing, evaluating, and sustaining interventions. Many community programs are operated by non-profit organizations and, in exchange for providing services, receive subsidies through Federal, State, or local funds and receive tax exemptions. Thus, they are able to offer health services at lower cost than private organizations that are obligated to shareholders to earn a profit.
- **Health Care Interventions.** Billions of dollars are spent annually to monitor and improve facets of health care in the U.S. Interventions have been

designed for systems of care (e.g., designing integrated electronic medical record systems to better coordinate care for populations with multiple chronic and acute conditions), health care providers (e.g., continuing education for pediatricians to better target developmental services to children most in need), and consumers of health services (e.g., educating pregnant women to attend regular prenatal care visits). Health-care monitoring initiatives, in national, State, and local surveys, have been designed to monitor the quality of care provided in health plans, and can be used to examine and reduce disparities across demographic groups.

- **Individual-level Interventions.** While less comprehensive in its scale and scope, individual-level initiatives intervene and minimize the effects of negative health-related behaviors. Altering individual behaviors that influence health (e.g., reducing smoking and encouraging exercise) is the focus of these individual-targeted interventions, and there are numerous theories that identify the complex pathways and barriers to elicit improvements in behavior. The integration of behavioral science into the public health field has been a valuable contribution, providing a toolbox of health-related behavior change strategies.

One of the most prominent models integrating behavioral science and public health is the Social Action Theory. Behavior in this model is described as the interaction of biology, environment, and social context, and identifies these as critical factors in determining the success of any health-related behavior intervention.<sup>2</sup> Behavioral change programs can be implemented at the community level, such as in neighborhoods or in community groups, but the focus of behavioral change is nonetheless on each individual.

## CHALLENGES AND BARRIERS IN IMPLEMENTING THE STRATEGIES

Strategies and interventions to reduce disparity can make an impact to improve the health care experience of vulnerable populations. However, the widespread change in the American health care system that many consumers and professionals yearn for is struggling to gain momentum in our current political and cultural climate. Instigating change in the nation's public health is consistently challenged by the conflict of long- versus short-term gains. Effective interventions may require a decade or generation before revealing a positive and sustainable outcome; however, the public prefers to see

benefits in a shorter time frame. Even for policymakers, it is difficult to allocate resources toward strategies that may improve health status for the next generation when the current generation still faces unmet health needs.<sup>3</sup> An encouraging exception can be found in the Federal Healthy People projects that specifically identify long-term health goals to complete over a 10-year period.

As the result of political pressure to make visible changes over the short-term so candidates can be re-elected, investments in public health have not always been made with the population's health as the top priority. Another significant form of political pressure exerted on policymakers is that of interest groups. Buffered by influential campaign contributions and the voting power of the people they represent, interest groups can also compromise the priority of population health. To propel their agendas forward, interest groups hire professional lobbyists able to strategically maneuver through the nation's political labyrinth.

American culture also contributes to the nation's sluggish changes in health care policy. While Americans have passionately championed many causes in the past century: civil rights, women's rights, and rights for the labor force, children, and senior citizens that met with positive results, a social movement for comprehensive health care benefits for underprivileged groups has not been cultivated by the public so as to motivate revolutionary change.<sup>4</sup> Instead, the changes and expansions to government-funded care for the underprivileged have been incremental and fragmented.

In lieu of a national health system, America features a fragmented approach in which numerous governmental agencies and congressional committees control the nation's health care budget. Though more seamless for privately insured individuals, public health care consumers are forced to navigate various sources of care and payment options across the health care spectrum as some health care services are financed differently from others. Considering that individuals over a lifetime will require most forms of care across that spectrum, preventive health, mental health, specialty care to name a few, fragmentation will negatively affect the nation's vulnerable populations by restricting access and reducing the quality of their care.

From a social determinants perspective that incorporates education, employment, behavior, and community factors into the health care paradigm, the health care delivery system is even more fragmented, making it difficult to successfully integrate these factors into health care interventions. For example, according to Oldenburg, behavior modification interventions

are successful if they target more than just individual behavior. Local support in the form of recreational access or designated nonsmoking areas can encourage the sustainability of these interventions.<sup>5</sup>

The economic repercussions of such a fragmented system have made the U.S. what it is: the OECD country that spends the highest percentage of its GDP on health care yet does not offer universal coverage. Such a complex payment system conspicuously increases the administrative needs and costs of the health care system, creating expenditures that do not translate into benefits for the patient. Our costs are also higher as a result of salaries paid to health care providers in the U.S. that are higher than those paid to providers in other OECD countries.<sup>6</sup>

Would expanding the role of the Federal government simplify the system? Possibly, but public disdain for governmental intervention makes significant Federal expansion an unlikely option. Though health care concerns are at the center of presidential debates every four years, Americans appear to be much more comfortable with State and local autonomy, perhaps a cultural remnant from the early days of the nation's history.<sup>7</sup>

Another barrier to garnering support for strategies to reduce disparities is the focus of Federal health policy on cost-containment. With a growing deficit, policymakers are concerned by the nation's consistent increase in health care costs. Consequently, policies conveyed in terms of cost containment are favored over those addressing access and quality of health care, which creates a challenging political climate in which to address health disparities.<sup>8</sup>

Given the nation's relative comfort with State and local intervention, could an expanded State role encourage strategies to improve health and reduce disparity? According to a 2000 RAND Health Report, expanding the public safety net to cover the uninsured using a State-financed plan would not work. Because States vary significantly in the number of uninsured residents they have, the financial burden per State would be unequal. In fact, those States with the most uninsured are the least able to afford expanding services to care for them. A national program would be more likely to distribute funds according to average family incomes in each State, thereby truly identifying and helping the States that need it.

Other arguments have been made against expanded State control over health care. State autonomy would create a nation of 50 unique health care systems which could pose particular problems for coordinating national

public health strategy, a serious consideration in light of ongoing threats of terrorism. Furthermore, conspicuous differences in State health policies could lead to population redistribution as residents relocated to the States offering better health benefits.

Another challenge faced by the numerous programs and interventions reviewed in the prior section is the difficult task of measuring outcomes. Particularly where social determinants are concerned, it is challenging to tease out the effects caused by the intervention and not by other economic, social, or health care influences.<sup>9</sup> However, to reap the full benefit of an intervention's investment, it is essential to distribute the program's results to create an integrated, collective foundation building toward a better understanding of the mechanisms linking poor health outcomes to vulnerable populations.

Furthermore, communities feel they have been taken advantage of when they participate in research but never receive feedback or see benefits from their participation. Considering the value that community participation and partnership contribute to public health initiatives, it would be wise to strengthen the relationship through open communication.<sup>10</sup>

## COURSE OF ACTION FOR RESOLVING DISPARITIES

The idea that underprivileged populations in the U.S. have poorer health status is not recent; however, Americans have not reacted strongly by advocating aggressively in a unified voice on behalf of these populations. It is not particularly difficult to explain the public's response. Americans have been known to tolerate high levels of inequality because they have a great faith in the nation's opportunities for individual upward mobility.<sup>11</sup> While many Americans may acknowledge these vast disparities, they may also believe that social programs such as providing universal health insurance coverage cannot be done without lapsing into socialism. Many Americans fear that having a government bureaucracy control the health care system would reduce personal freedoms in seeking health care, or create large waiting lists for care.<sup>12</sup> Americans likely have a similarly resigned attitude toward the persistence of disparities in health as well as the likelihood that a truly integrated local and Federal effort could eliminate them.

By examining social shifts in other developed countries that have successfully motivated an unresponsive public to take action, we can identify a course of action to move us toward our goal of changing the political

and social climate to benefit vulnerable populations. In seeking to provide an agenda for placing public health issues higher on the public's agenda, we suggest the following course of action that consists of ten steps in four evolving stages.

In the *preparation stage*, efforts are made to enhance awareness, severity, and relevance of the issues. In the design stage, programs and initiatives are developed that focus on the major multiple determinants of the problem, are integrated in nature, and feasible. In the implementation stage, attention is given to using effective *implementation strategies*, being persistent, and making sure progress is made incrementally towards the final goal. In the *post-implementation stage*, programs and initiatives are evaluated and feedback is used to help adjustment and improve their performance. We describe these eleven steps in further detail.

### Enhancing Awareness

Given the great number of articles in the medical and social science literature on health care disparities in the U.S. and the recent government reports addressing the problem of health disparities, one might be surprised to find that experts still consistently cite lack of problem recognition as a barrier to eliminating health disparities. Many individuals, including some policymakers, still think that Americans enjoy the best health care in the world and that our health status leads all other nations. The vast disparities presented in this book are not fully known or acknowledged. It is critical that the public and policymakers know about the true state of our health and disparities among us.

Education can be used as a tool to raise awareness about health care disparities and to promote a climate of outrage and support for programmatic changes to eliminate such disparities. Education-based approaches generally fall into one of three categories: educating policymakers and the general public about health care disparities, educating vulnerable groups, and promoting better educational attainment in general as a strategy in and of itself to eliminate health care barriers.

One way to draw attention to a public health issue such as disparity is to illustrate the issue's pervasiveness using local, State, and national data. There have been some efforts already to bring the issue of health disparities to greater community and public attention. *Healthy People 2010* lists as one of its top two goals the elimination of health disparities among different segments of the population and the brochure, *Healthy People in Healthy Communities: A Community Planning Guide*, which highlights the problem of health

disparities and offers strategies for communities to build coalitions and alliances in order to address the issue (healthy people website), are two noteworthy examples. However, even more such efforts are needed.

Statistics can often make the issue more compelling to a public unaware that vulnerability is so widespread. Socioeconomic data is recorded at the local, State, and national level but not always analyzed.<sup>13</sup> Examining untapped data resources for valuable metric contributions to the field of study will further promote a public health cause. The use of data can also be advanced by improving the way in which disparity is measured. It is challenging to establish clear and precise methods to measure complex and qualitative factors such as stress and discrimination; however, continued development of statistical methods to measure such factors could make a tremendous, positive impact on disparity research. Improved metrics would also enable progress to be better tracked over time.

To go a step further, policy alternatives and quantitative goals need to be widely publicized. Technology has provided innumerable means for distributing information. A media campaign incorporating internet, television, radio and print ad channels with a simple, readable, and galvanizing message could reach and motivate a broad segment of the population. Policy alternatives, goals and research, in particular, should also be well published in highly regarded academic publications in order to ensure consistent political pressure on policymakers.

## **Demonstrating Severity**

In addition to enhancing awareness, it is critical that the public and policymakers understand the severity of the problem we face. Policymakers are more likely to act when there is a clear public demand and when there is a perceived crisis. One way to demonstrate severity is the publication of international rankings on key health and health care indicators. Taking advantage of national pride by highlighting a public health issue for which the U.S. performs poorly compared to other countries may motivate the public to take steps to improve their national ranking. This strategy has often been invoked to garner support for infant mortality interventions. The U.S.'s abominable ranking among OECD countries as the 7th highest in infant mortality continues to inspire outrage that a country with so many resources does not ensure adequate care for vulnerable citizens.

## **Establishing Relevance**

Although most Americans are concerned about the plights of the vulnerable populations, relatively few have considered these to be their own problems. Fewer have

the understanding that it is actually to their economic advantage to address the plights of vulnerable populations. A rational review of the costs and benefits associated with improving the health of vulnerable populations reveals the advantage of making such an investment. The consideration of costs to the nation resulting from poor health status among the vulnerable cannot evade the public's attention much longer.

Numerous studies have explored the costs of limited access to care and inadequate quality, not only to the underserved populations, but the cost to the general public as well. The American public does not seem to relate the suffering of vulnerable populations to the suffering of the nation or to associate wasted human potential with poor health status among vulnerable populations. Missed workdays, social and interpersonal violence, inefficient use of health care dollars, and compromised educational attainment are just a few of the factors putting America at a competitive disadvantage as a result of an insufficient health care system.<sup>14</sup>

Note, for example, that depression, a condition that is much more common among vulnerable populations, costs employers \$44 billion each year in lost labor time. Studies have also estimated that about 3-5% of hospital days used by the uninsured could have been prevented if the patients had been insured and received appropriate ambulatory or primary care.<sup>15,16</sup> Taking all these and other factors into account, if vulnerable population groups had health status levels equivalent to non-vulnerable groups, our national earnings may be able to improve by 10-30%.<sup>17</sup>

Every taxpayer is affected by the health status of vulnerable populations. The total cost of health care services used by the uninsured was estimated to be \$98.9 billion for 2001. Uninsured individuals receive about \$35 billion in uncompensated care each year, the majority of which is provided by Federal, State, and local governments.<sup>18</sup> The Institute of Medicine's Committee on the Consequences of Uninsurance concluded that the aggregate cost of the poor health status and high mortality rate of uninsured Americans is between \$65 and \$130 billion for each year of health insurance forgone.<sup>19</sup>

Communities are also affected by the health status of vulnerable populations as they shoulder a disproportionate amount of the subsidized care that uninsured individuals receive. As a result, other health care services such as infectious disease control, immunization programs, and emergency preparedness that are dependent on the local tax revenue may be shortchanged to provide basic health needs to a community with many underprivileged residents. It is also important to consider

the liability these communities face when service providers such as hospitals and clinics become financially insolvent as a result of providing uncompensated care. These service providers can no longer afford to offer services to anyone in the community.<sup>20</sup>

Current data strongly suggests that the nation's health care system does not function cost-efficiently.<sup>21</sup> While spending more money than any other OECD country, more than 40 million residents in the U.S. have no dependable means to pay for their health care, and the nation's health system financing is deteriorating as a consequence. Does the nation have the resources to fix itself? And if so, how can the public and their policymakers be motivated to redistribute those resources?

In the conclusion of a lengthy analysis on the hidden costs of uninsurance in the U.S., a 2003 Institute of Medicine report determines that the benefits of providing health insurance to those residents currently uninsured would substantially outweigh the costs to be incurred.<sup>22</sup> In fact, Democratic Senator John Breaux from Louisiana has pointed out, the estimated cost of extending the safety-net to all (\$600-\$700 billion over ten years) is less than the expected average annual revenue loss from the Federal tax cuts since 2001.<sup>23</sup>

### **Focusing on the Determinants**

In designing interventions, it is important to address the major determinants of health disparities, which we have shown include social and community factors. The U.S. should expand the focus on health disparities to include these more socially based aspects of health development and not just limit the discussion to disparities in medical care. As stated by McGinnis, “public policymakers need to begin thinking in terms of a health agenda rather than a health care agenda or—even more narrowly—a health care financing agenda” (McGinnis 89).

The U.S. needs to begin to develop a health policy agenda that reflects not just the impact of medical care services on health, but more importantly the impact of social and environmental factors. An examination of current health policy debates reveals that most debates center primarily on financing of health care rather than health outcomes or social determinants of health. The U.S. should expand this focus on financing and issues of cost containment to include “health impact assessment,” which would estimate the influence of social, economic, and health care policies on population *health*, not just cost-savings.

Based on our solutions-focused framework, interventions may not have a significant and long-lasting impact

if they focus only on immediate determinants of health (e.g., quality of care) while neglecting more fundamental determinants of health such as personal and community levels of socioeconomic status. While it is much more difficult to change social and economic policies, than pass new regulations to monitor health care quality, it is necessary to examine and intervene, when possible, much earlier in the process of poor health development. Since many of these social factors are the root causes of poor health, tackling them will be paramount to resolving health disparities in the U.S.

### **Expand the Focus on Multiple Determinants**

As our book has repeated continually, most interventions used today are not very comprehensive and focus on a single narrowly defined problem or population segment. For example, programs have been developed to specifically serve individuals with HIV, natives of Hawaii or the Pacific Islands, the disabled, and the homeless, among others. While these programs have no doubt had an important role in improving health for these groups, they have a very limited focus and often have to compete among each other (even within government health departments) for the funding to sustain their efforts.

These programs often only address one aspect of what makes a group vulnerable. For example, homeless individuals have many vulnerable risk factors including being low income, not having a stable social support system, lacking stable housing, and frequently they are unemployed and lack health insurance. They are dealing with mental health and physical health issues that further complicate and exacerbate these social problems. But programs serving homeless individuals are generally not sufficiently coordinated to affect substantial long-lasting and comprehensive changes.

Homeless shelters, for example, are generally funded through a network of local public and private partners and charities. The very best of these shelters offer referrals to health care, psychological counselors, and have support programs for educating, training, and case management for these individuals in finding stable sources of social assistance, employment, and housing. More commonly, these shelters simply provide a roof for the night and have little influence on any of these other risk factors. Even the Federal Health Care for the Homeless Program, which provides exceptional physical and mental health services on-site to many homeless individuals, has limitations in its mandate and cannot address the full range of risk factors that are present for homeless individuals.

What has evolved is an elaborate patchwork of local, State, and national programs and policies that have varying comprehensiveness and sustainability in serving vulnerable populations. If these various programs could be synthesized, or national efforts could be developed to provide more overarching guidance and direction to address these multiple risks simultaneously, these programs would have better chances of success in intervening in the creation of vulnerability. For example, addressing mental health issues among the homeless (e.g., treating schizophrenia) would bolster the successes of other areas such as helping individuals develop social support networks, and make use of education, training, and employment assistance. Combining these efforts would allow these more effective and comprehensive services to be touted to funding agencies as packages, and may help to reduce levels of competition among programs serving these vulnerable populations.

### **Stressing Multi-Level Integration of Interventions**

Invariably, for some vulnerable groups there are gaps in service provision, and for others there are major duplications. Building on the focus on multiple risk factors, efforts could be made toward unifying services across agencies and organizations with common goals. Domestic and foreign public health initiatives have shown greater promise when utilizing the collective resources of public and private advocates. Recognizing common goals encourages multi-sector alliances and minimizes partisan or other political barriers.

Participation and empowerment at many political and community levels is another critical component of acceptance, success, and continuation of any set of interventions. For example, the National Commission to Prevent Infant Mortality is a successful joint public, private, and congressional effort to combat infant mortality in the U.S. It is not a coincidence that this consortium, based on collaboration among organizations at many levels, has made substantially greater progress in reducing infant mortality than the U.S. has made in other areas.

Improving the health of vulnerable populations will require the participation of traditional health agencies, and involvement from education, housing, environmental, criminal justice, and economic agencies. To achieve cross-agency collaboration, these agencies should create standing mechanisms for policy development among sectors and promote interdepartmental collaboration, and create networks among public and private agencies and particularly with advocates to openly study,

evaluate, and disseminate policy options. These efforts should also include greater community involvement and leadership in priority-setting and policy development.

Perhaps one of the best ways to include communities in decision-making is to focus on community strengths and resources rather than community deficits or problems. Communities should be seen as action centers for development, progress, and change. Community members and community leaders should have a central role in planning and managing initiatives. Through community mobilization, skill-building, and resource sharing, communities can be empowered to identify and meet their own needs, making them stronger advocates in supporting the vulnerable populations within and across their community boundaries.

### **Ensuring Feasibility**

Making sure intervention is feasible is also critical to its success. Areas of feasibility to be considered include:

- *Technical feasibility* – Can the intervention plausibly solve or reduce the problem as defined?
- *Economic feasibility* – What are the costs and benefits of given intervention from an economic standpoint?
- *Political feasibility* – A proposed intervention must survive the test of political acceptability. This depends on support from key officials, other stakeholders inside and outside of government, and ultimately voters; and
- *Administrative feasibility* – Assess how possible it would be to implement any given intervention given a variety of social, political, and administrative constraints.)

### **Applying Strategies**

In the implementation stage, proper use of strategies is critical to success. An approach that has been successful in Europe, restating the public health issue using different language, may attract new attention to an issue not previously compelling to the public or policymakers. In the past, advocates have used the social justice argument to persuade the public that inequality in the U.S. needed to be eliminated. Politicians in the Netherlands were more impressed by a discussion centering on “lost human potential” than inequality, and perhaps the same affect would be seen among Americans if the national conversation focused less on social justice. Furthermore, Moss recommends that the



discussion not target special populations but include the whole spectrum of socioeconomic status, broadening the appeal of the policy issue.

Another strategy is to work on realistic intervention. This strategy is a call to action for academics, advocates, and associated organizations to investigate and construct policy options. Presenting the public with choices they can mobilize around reduces the frustration and resulting resignation brought about by a system of limited alternatives. Quantitative targets, like the ones established by *Healthy People 2010*, also help the public focus their efforts toward specific goals.

To ensure that public health issues remain on the policy agenda, it is essential for the public to be able to gauge an initiative's progress or lack thereof. Promoting action steps using the media channels mentioned above will help keep the public engaged.

Foundations may be mobilized in shaping public opinion. Foundations provide a unique avenue for promoting scientific and policy discussion of a public health issue. In addition to providing the necessary financial resources to further explore issues such as disparity, foundations are able to influence public opinion through publications and media and the discourse they inspire. Behavior and lifestyle have been shown to make great contributions to health. Studies estimate that roughly one quarter of socioeconomic differences in mortality are attributable to variations in lifestyle (Syme 115). One important strategy is to target health promotion campaigns to vulnerable populations (Adler 68-69). In doing so, there are important caveats to consider. Oldenburg cautions that “traditional health promotion and disease prevention efforts are not as effective in people from lower SES groups” (Oldenburg 490). One way to address this is to have more community involvement in development of messages, more culturally appropriate materials, and media campaigns, using local community groups and faith-based organizations.

However, there are other important factors to consider. “During the past 25 years, U.S. government intervention to improve health has come almost entirely through initiatives aimed at changing individual behavior... Individual behaviors are, to a large extent, shaped by social class position and the material environment” (Moss 1631). In other words, it will take more than a focus on individual behavior modification campaigns in order to change individuals' behaviors. Interventions with a behavioral focus are more successful if the information and education are complemented by support and structural change (Oldenburg 490). Through safe play and park areas, urban renewal projects to build safe

and affordable housing, tax incentives to attract grocery stores to urban areas, and enforcement of existing legislation to promote cleaner air (to name just a few examples), urban planning, housing, and environmental policies can provide the “structural” support for healthy behaviors.

## **Persevering the Efforts**

The vast disparities in health and health care we experience today are the results of social, economic, and health policies or the lack of them in the last decades. It is naive to believe these disparities can be eliminated within a short period of time, especially when some of our current policies and programs contribute toward widening the disparities. Although politicians like “quick-fixes” and “slogans” (as stating eliminating disparities in *Healthy People 2010*), we have to be prepared for a long-term and sustained campaign.

## **Guided Incrementalism**

Given the incremental nature of social and health policies in this country, more success may be expected if we build upon initiatives that already have credibility. A new intervention is more likely to be taken seriously if its objective is integrated with an older initiative that has already achieved credibility. The Healthy Schools, Healthy Communities initiative provides an illustrative example. The national program funded by the Bureau of Primary Health Care began as a school-based initiative to provide primary care to vulnerable children. Over time, additional services have been integrated into the program to address other public health needs of this population. As a result, Healthy Schools, Healthy Communities has expanded beyond primary care to include violence prevention, fitness, parenting groups, and self-esteem enhancement programs.

## **Evaluation and Refinement**

In the post-implementation stage, programs and initiatives should be thoroughly evaluated, modified, and continually improved. Evaluation, feedback, and refinement processes should be built into the funding of every intervention or policy, and the results of these analyses should guide future program and policy development. While a culture of continual process improvement should be developed, it will be important to judge the progress made by these interventions in a realistic way. Programs that are comprehensive in scope (addressing multiple risks) should be evaluated along multiple dimensions, but should be appropriately evaluated against criteria that are feasible to obtain. In

too many circumstances, health and social programs are judged on whether they directly impact the health of their consumers, even though the program is funded for short-term cycles (i.e., just two or three years). If these results are possible over a longer period, programs must be held accountable to meeting their goals to improve health.

Hopefully, considering these eleven steps in any course of action will help to promote health disparities to a more prominent position on the public agenda. It is essential to keep the public engaged and educated. Health disparities among vulnerable populations are not unavoidable. Interventions to eliminate socioeconomic and racial and ethnic disparities have been successful in the United States through health care delivery interventions.<sup>24</sup> Integrated efforts in Canada and Australia have made progress outside the medical realm toward reducing health inequalities associated with the more socially based determinants of health.<sup>25</sup> Using these action steps and adapting them to the needs of the U.S. population are the requisite next steps to prevent the occurrence of and reduce the consequences of health vulnerability.

## **IMPLICATION FOR TRAINING PRIMARY CARE MEDICINE AND DENTISTRY**

In this final section, we draw implications for training primary care medicine and dentistry.

### **Primary Care Is Good for Population Health**

Research shows primary care physician supply is associated with improved population health status. States and MSAs with greater primary care physician to population have superior population health indicators including longer life expectancy, lower age-adjusted total mortality, lower age-adjusted stroke mortality, and lower infant mortality.

The policy implication is to further expand primary care labor force through funding for training in primary care medicine and dentistry.

### **Primary Care Is Associated with Reduced Disparities**

Research indicates that primary care serves to moderate the adverse impact of socioeconomic on health and that primary care access reduces racial and

ethnic disparities in health. Primary care exerts greater positive impact on health in higher- than lower-income disparity areas.

The policy implication is to expand and strengthen the primary care labor force particularly in areas with higher socioeconomic disparities and health disparities.

## **Health Centers Provide Cost-effective Primary Care to the Nation’s Vulnerable Populations**

Health centers are safety-net primary care providers to the nation’s vulnerable populations including the uninsured, racial/ethnic minorities, those at or below the Federal poverty line, women and children, migrants, the homeless, the mentally ill, and the chronically ill.

Health centers reduce or eliminate disparities in primary care access and quality due to race/ethnicity, insurance status, and economic status.

To accommodate the expansion and strengthening of health centers, the primary care labor force must be expanded and willing to serve in medically underserved areas. Facilitating efforts include training in primary care medicine and dentistry, the National Health Services Corps program, and the scholarship and loan forgiveness program.

## **Primary Care Training and Education Should Be Designed to Target Vulnerable Populations**

The Committee is encouraged to develop a framework that links primary care training and education to serving vulnerable populations and medically underserved communities. The framework consists of multi-levels including individuals, institutions, and communities.

- Individuals (medical students, residents, practitioners, educators): E.g., increasing recruitment of racial/ethnic minorities, disadvantaged students, and those residing in medically underserved areas.
- Institutions (education/training): E.g., enhancing diversity in faculty composition, innovative curricula, interdisciplinary approaches, graduates choosing primary care, and graduates choosing to practice in medically underserved communities.
- Institutions (residence/practice): E.g., strengthening diversity in the health care workforce, patient

safety, competencies in delivering quality care, and achieving superior performance (patient and provider satisfaction, patient outcome, and efficiency).

- Communities (medically underserved): E.g., partnering with community stakeholders in improving health care delivery with the goal of enhancing access to care, reducing emergency room use and ACS hospitalizations, and improving population health outcomes.

### **Educate/Train Primary Care Providers to Focus on Causes and Multiple Risks Rather Than Symptoms and Single Risk**

Primary care providers should be educated and trained to be:

- Technically capable (up-to-date with state-of-art treatment protocols, chronic care, mental health, medical technology, and information technology)
- Providers of teamwork and integrated care
- Culturally competent
- Person-focused (causes and multiple risks rather than symptoms and single risk)
- Family-sensitive (non-health care needs, enabling services)
- Community-oriented (maximizing resources)
- Activists and agents of change

### **Strengthening Research, Evaluation, and Demonstration to Ascertain the Efficacy of Primary Care Education and Training**

Research, evaluation, and demonstration should assess/establish the relationship between education/training and improved health care outcome (access, efficiency, quality, and health status) for the nation's vulnerable populations and medically underserved communities and reduced health and health care disparities across racial/ethnic and socioeconomic groups and medically underserved and other communities.

Partnership should be strengthened among related programs and funding mechanisms to coordinate efforts and maximize impact.

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# APPENDIX B – A MULTIFACTORIAL APPROACH TO DEFINING VULNERABLE POPULATIONS AND INDIVIDUALS

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John J. Frey III, M.D., Nancy Pandhi, M.D., David Brown, Ph.D.  
University of Wisconsin

While the concept of vulnerable populations has been in wide use over the past 20 years, in health care it has been applied to groups or populations of patients who have adverse risk for developing diseases or are at higher risk for complications or increased mortality from those diseases. On example are HIV positive individuals, who are at increased risk for complications such as nosocomial infections compared to individuals who are not HIV positive.

While much important epidemiologic research has identified populations which are at higher risk, we would like to discuss vulnerability as a complex concept which involves a variety of factors for both whole populations and for individuals within populations. Understanding vulnerability from this perspective can also inform approaches to prevention in health care.

This paper will bring many of those factors into the assessment of vulnerable populations and individuals which should become part of the education of all health care professionals. Such education, when applied to clinical practice would identify those most at risk and help design plans for care which would help health professionals practice prevention in its broadest sense.

As education and patient care systems are challenged by reports from such sources as the Institute of Medicine to develop safer systems and systems which focus on increasing quality particularly for vulnerable populations,<sup>1,2</sup> primary care health professionals will be at the forefront of such systems. The added pressure of increasingly limited financial resources for paying for health care in the U.S. demands that resources be directed toward higher risk groups or individuals within health systems and also demands that vulnerable individuals and populations be identified and approached with preventive and curative care, both for the humane reasons as well as the need to avoid cost shifting and un-reimbursed care.

## A MODEL FOR THINKING ABOUT VULNERABILITY

We propose a resource-based model of health vulnerability that has the advantage of being dynamic, and therefore potentially modifiable through different resource allocation. This model may be applied to populations or individuals and takes concepts from the social sciences, economics and geography into consideration. We will discuss a multidimensional model based on human resources, otherwise known as capital. Capital is further broken down into three categories: financial, human and social. *Financial capital* is defined as material wealth and assets. *Human capital* includes the knowledge and skills that allow an individual to be economically productive. Human capital can be obtained both through formal means such as education, and informal means such as life experiences and intra personal factors, such as resilience and perseverance. *Social capital* is derived from personal relationships, associations, measures of community trust and support networks. Having less of any of these kinds of capital has been linked to poorer health. Individuals with more of a certain kind of capital may have resilience to negative events by substituting one kind of capital for another.

Certain populations are susceptible to irreparable harm to their well-being through particular events or circumstances. Within these populations, there may be some individuals who are able to persevere better than others. Vulnerability is a fluid process; individuals may be vulnerable at some points in their lives and not others. Developing a multilevel risk assessment model of vulnerability for poor health allows for the examination of factors which may mitigate its negative consequences.

The importance of this model for health care professionals would be to define more clearly the various at-risk groups within communities or populations of patients served in primary care medicine and dentistry. Previous reports from the Advisory Committee on

Training in Primary Care Medicine and Dentistry have described socioeconomic, cultural and physical barriers for populations gaining access to quality health care and educational approaches to addressing those barriers.

## **A Resource-based model of vulnerability applied on a population and individual level**

Three examples of how a resource-based model of vulnerability can be applied on a population and individual level are described below.

### **I. The Gulf Coast Hurricanes of 2005**

The differences in the ability of individuals to cope with the consequences of the hurricane that struck the U.S. Gulf Coast is a recent, highly visible example of vulnerability. Because of geographic factors, all those living in the area were vulnerable; differences in levels of financial, human and social capital for sub-populations (neighborhoods) and individuals created very different levels of personal vulnerability.

The geographic vulnerability of low-lying parts of New Orleans and towns surrounding it placed those who lived in those communities in harms way. While the fact that levees, sea walls and other means of keeping the waters from the rivers and lakes from inundating Southern Louisiana had been in such disrepair had been known for some time, the very presence of the city in an area below sea level made it a city at risk compared to many similar-sized urban communities in the U.S.

Many of the most severely affected populations in the Gulf Coast were those where housing conditions were worst. The density of non permanent housing—trailer parks, and housing that lacked foundations—in areas along the Louisiana and Mississippi coast were also at higher risk for destruction and the people who lived in them at greater risk for morbidity and mortality directly resulting from the storms. Analyses of other large urban communities, such as Houston, which lie in flood plains, would also represent a geographic vulnerability, as would smaller communities along the upper Mississippi River that were flooded in the 1993 floods.<sup>3</sup>

Differential access to human resources was represented by the vivid racial inequality that was depicted in the aftermath of the flooding. Of those living in the most vulnerable geographic communities in New Orleans and surrounding communities, most were African-American. While race in itself was not an isolated factor, the historic lack of access to higher quality housing in the African-American population in the Gulf Coast created

a confounding variable of race added to the low-quality housing, most of which was in geographically vulnerable flood plains.

Differential resource access conceptualized also as socioeconomic contributed to population-level vulnerability. It played out most in the inability of families and neighborhoods to evacuate to safer places because of lack of adequate transportation, either private or public. Low-income populations throughout the region, once the flooding had happened, also had difficulty accessing medical care, both during the acute crisis because of the storm's effect on closing hospitals and health care facilities in the region, and afterward, because of the lack of health insurance which created difficulties with access to needed services. Displaced poor populations continue to be vulnerable even after relocation because of their lack of portable health insurance coverage.

Finally, age and disability were additional factors for individuals within populations vulnerable from other causes. Many of the deaths that took place after the initial storm were in elderly or disabled people who either could not or would not evacuate their homes or institutions. The loss of electricity and of access to medications or home health nursing all had tremendous effects on an already sick population who had little reserve to deal with an overwhelming natural event.

Thus, in looking at the Gulf Storm disaster, individuals and populations most affected suffered from a confluence of geographic, community, age, racial and health risks factors that produced terrible outcomes.

Tracking the course of two hypothetical individuals with differential vulnerability from this event may further elucidate the human resource model. Person A and Person B are both from similar racial backgrounds, achieved similar education, and live in the same neighborhood. Person A was employed but did not have a car or social support system in the local area. Therefore, he remained in his house during the flooding and had to be evacuated. He now has an uncertain future in a new area of the country and is having difficulty finding new employment. Person B also had a job and not a car. However, he had developed close friends through his workplace. He was able to get a ride with a friend and leave the area with a few possessions during the recommended evacuation period. He is establishing himself in the area of the country where his friend's family lives and with its help has found a new job. Thus, person B's increased social capital allowed him to substitute for his diminished human and financial capital and be less vulnerable to this catastrophe.



## **II. The Chicago Heat Wave**

In July 1995 the City of Chicago had 521 deaths as a direct effect of the heat wave which struck the city. While excessive heat is a factor in deaths in many urban communities, Chicago had a vastly larger number of such deaths that could have been expected. While the Gulf Coast disaster was heavily influenced by geographic vulnerability, the deaths in the Chicago heat wave were more a result of the destruction of social capital in the communities in the city that were most affected. Chicago received most of the attention in the U.S., but many of the same factors that caused people to die in Chicago were similar to other cities in the Midwest during that summer. Extensive analysis of the heat wave deaths can be found in an important book by Klinenberg.<sup>4</sup>

The most important factor for those who died during the heat wave was their age. Seventy-three percent of deaths were in people older than 65. While mortality is higher in older people, the excess in the heat wave indicated something more than the normal vulnerability of aging people to stress-related events. Race was also an important factor leading to death from the heat. Overall, more African-American than white citizens died. Age- and population-adjusted deaths were 1.5 times higher for black than white elderly and 1.9 times higher in black citizens over 85.<sup>5</sup> Surprisingly, the number of Hispanic heat wave-related deaths was far smaller—less than 2% of all deaths—than would be expected compared to the Hispanic population of the city. Another important contributing factor was gender. Age- and population-adjusted deaths in men was over two times that in women. Most of the deaths in the City of Chicago were in poor neighborhoods with lack of substantial housing. Two-thirds of the elderly poor in Chicago live alone. Most of the elderly who died were living alone—either in apartments or single-room occupancy hotels for the poor. The profile of someone most vulnerable to die from heat-related deaths, then, was a black man older than 85 living alone in a high poverty neighborhood.

On a more detailed analysis, Klinenberg found that there were important characteristics of the lives and the neighborhoods that contributed to vulnerability. Those who died lived in communities which had gone through rapid changes in the past 25 years, losing neighborhood stores, churches, strong social clubs, and other community-related support systems. Vulnerable neighborhoods had not rebuilt the social systems which they had previously. Many of the elderly poor living alone could not afford to move from their apartments when the neighborhood changed, increasing their so-

cial isolation. In addition, those neighborhoods where most of the deaths took place were high crime areas, contributing to the fear that many elderly express about being vulnerable to crime and causing them to not leave their apartments even in extreme circumstances. (This same fear was in evidence in the number of elderly who refused to evacuate their homes in New Orleans.)

One of the explanations for the high prevalence of men who died in the heat wave lies in the realities that men are much poorer in developing social networks than women. When they lose jobs, which are often the source of social contact for men, there is a concomitant loss of friends and acquaintances and increasing social isolation. Living alone should be contrasted with social isolation and loneliness. Many elderly live alone quite successfully, but the citizens who died had little contact with others—family or friends, and lived in extreme isolation and often have poor nutritional patterns as well, even in societies which make vigorous attempts to get food to them.<sup>6</sup>

However, the poor elderly's isolation of themselves cannot explain why some neighborhoods had deaths at a rate much higher than others. The lack of equal access to social services, concerned neighbors, and local facilities with fans and air conditioners were factors that increased vulnerability in the poor isolated elderly. Increased social cohesion—citizens acting on concerns for each other—has been shown to decrease crime between similar neighborhoods in Chicago.<sup>7</sup> Lack of social cohesion was one of the factors that created the deaths in the isolated elderly in the heat wave.

In summary, Klinenberg outlined four trends that increased vulnerability in the Chicago heat wave: a demographic shift that left more people living alone, a cultural condition that created a “culture of fear,” spatial transformation of neighborhoods which decreased public space and increased the density of living quarters for single elderly, and a gendered condition that rendered elderly men isolated from family and friends.<sup>8</sup> These are all elements in what we have described as the matrix of financial, human and social capital.

## **III. Accidents and Vehicular Homicide in Northern New Mexico**

New Mexico is one of the poorest States in the United States and has many of the worst health-related outcomes. As a largely rural State, New Mexico has issues of access to care that are compounded by the very high levels of uninsured and Medicaid in the State. Rio Arriba County is one of the largest and most rural counties in New Mexico and has an all cause mortality that is two and a half times that of the rest of the State.

In Rio Arriba county, between 1990 and 2000, death from accidents was over three times (155 per thousand vs. 44 in the State) and death from motor vehicle accidents was four times that of the State as a whole.

Rural counties in the U.S. have few jobs available beyond agriculture or farming and related services. Citizens are required to commute longer distances for well-paying jobs. There is no large industry in Rio Arriba County. The largest employers other than State or local government are in the Los Alamos National Laboratories, in a neighboring county, which is a minimum 30-minute drive from large population centers in Rio Arriba and a 90-minute commute each way for most others. With no public transportation available, citizens are forced to drive for almost any job.

Factors that increase this county's vulnerability largely come from low levels of human capital, with high levels of alcohol and drug abuse also being factors and consequences of the problem. Forty-three percent of children in the county have had their first drink of alcohol by age 12 and 40% of students in grades 9-12 have participated in binge drinking in the previous 30 days.<sup>9</sup> In a county with a high level of poverty and inadequate housing, the educational level of citizens is particularly low and the educational system significantly challenged. The majority of the primary and secondary schools in the county are on the State watch list for low performance. Attendance at schools is low, and the dropout rate for Rio Arriba County is higher than in the rest of New Mexico and one of the highest in the United States.

Other elements of human capital relate to behaviors and habits learned through experience. County youth have lower levels in their families, schools and communities of the setting of boundaries and expectations—one measure of resilience in individuals. With not only families having difficulties with behavior control but also schools and the community, there are few restraints on risk-taking behavior, such as alcohol and drug use, or driving while drinking.

The county, particularly the youth, suffers from low resiliency factors that add to human capital. Positive peer influence, commitment to learning, life skills and social competencies are all essential aspects of individual and group coping with the adversities of geography and poverty. Rio Arriba County youth have significantly lower measures of resilience compared to the State. They report lower levels of a caring adult in the home or community. Lack of resiliency relates to higher levels of smoking, alcohol and drug use, and drinking and driving.

The combination of low human capital—education, life skills, and resilience—and the geography and poverty that require driving long distances for work have created a culture of risk in Rio Arriba County that has a particular effect on the young people who live there. Neither interventions at the level of primary care providers nor at the level of drug and alcohol populations<sup>10</sup> will have an effect without attending to issues of human capital that have negatively affected this county and are affecting similar rural counties in the United States.

### **Vulnerable individuals within vulnerable or less vulnerable populations**

The above examples highlight ways that both populations and individuals within those populations are vulnerable. A fourth case study will highlight the way that individuals can be vulnerable in their own right.

#### ***Hereditary Hemochromatosis***

Hereditary hemochromatosis is a genetic condition with an estimated prevalence of 1 in 250 white individuals.<sup>11</sup> Individuals with this condition over-absorb dietary iron from their gastrointestinal tract. This disease is more prevalent in whites, men, and usually manifests symptomatically during middle age.<sup>12</sup> Individuals usually initially present with nonspecific symptoms of fatigue, joint pain, and weakness. If left untreated, this condition progresses to cirrhosis, diabetes mellitus, and cardiac disease. The most common treatment for iron overload is phlebotomy, and if it is initiated prior to onset of these chronic conditions, individuals have a normal life expectancy.<sup>13</sup>

Individuals with this condition illustrate how a human resource model of vulnerability can be applied to determine risk of poor health outcomes. First, individuals with genetic susceptibility bear an inherent risk of manifesting this disease at some point in their lives. Their human resources, however, may heighten or attenuate this risk. An individual who is likely to delay accessing health care for his symptoms, due to limited financial, human or social capital, may not be diagnosed prior to irreversible manifestations. In contrast, an individual who knows his inherent risk and has more capital may be in a position to self-advocate for early diagnosis and treatment.

The developments in human genetics have demonstrated the ability to identify individuals who are at risk for genetically related diseases. Many screening programs exist for identifying individuals at risk for developing chronic diseases or hereditary conditions.

No doubt, with the advances in the understanding of the human genome, there will be more in the future. This inherent risk will become important to identify and place in the context of other multivariate individual-level and population-level risks.

## Teaching a Resource-Based Model of Vulnerability to Health Professionals

Application of a multivariate approach to vulnerability to clinical education requires bringing together the traditions of doctor-patient communication, the epidemiology of biopsychosocial health risks, then seeing the patient in the context of their lives and their communities. In the basic or preclinical sciences in medical and dental education, application of these principles to diseases or health conditions used in genetics education, clinical correlations, pathology or other courses would sensitize students to the realities of vulnerability and expand their and their teachers' views of disease causation and management. Patients become sick not simply because of some endemic or coded processes, they often become sick because of social determinants that contribute to financial, human and social capital.

In clinical training, health information systems can sort populations in primary care in many ways that would add to the understanding of individual or population-based vulnerability. One of the premises of population health is that there should be targeted interventions in high-risk populations and management of their problems. The growing demand for Electronic Health Records as one of the methods of closing the quality chasm should produce data which will help guide care to high-risk or vulnerable populations. However, simple office and hospital systems will not add all the necessary information. We need data from public health, urban and regional planning, social work and communities themselves if we are to look at the resource-based vulnerability process we have outlined. If one of the goals for primary care education in the next period of history is to bring primary care and public health education closer together, then the concepts we outline could be a way for those disciplines to come together in the clinical education of all students.

## Some thoughts on teaching vulnerability

The points we raised in the document submitted to the Committee on ways to think of a multidimensional model of vulnerability pose some real challenges for education. To discuss individual patients as members of vulnerable populations requires faculty members who understand the concepts and are able to integrate them

into clinical discussions. Faculty development, as is always the case, precedes any change in curriculum. We can't just wish things differently or require them without training those who will guide the process of change. Thus, a program to educate clinical faculty about financial capital, social capital and human capital as factors in determining the vulnerability of an individual patient is essential to any teaching of it to students or residents. Our experience with faculty members from non-clinical disciplines has been that they have important content expertise but often what they have to teach is not integrated by medical students and residents because there is no validation by clinical faculty.

**Recommendation 1:** That a faculty development program focusing on the factors that determine (social determinants of health) vulnerability be part of any effort to incorporate vulnerability into clinical primary care education. The faculty should be interdisciplinary with involvement of sociology, social epidemiology, geography and human behavior.

The best model for addressing vulnerability in the clinical environment is to use case studies and case presentations. As an assist in helping learners, just as in many other aspects of clinical education, a template with important facts and information would be required as part of the presentation of a patient. This would create a habit in students of asking questions or finding information about a patient that would then become part of their clinical practice. Just as a student has to learn the physical examination in a systematic fashion and do it repeatedly before being able to achieve competence, a student should learn about vulnerability in a systematic fashion. Some elements—race/ethnicity, some socioeconomic status data (insurance status), family structure and relationship (a genogram or active family representation), living status (address), marital or cohabiting status—are already parts of the existing medical record. However, other aspects are not:

- financial capital (hourly wage, physical/non-physical work, hours per week or month, WIC, food stamps, SSI, recent job change or loss, job stress overall)
- human capital (loving relationship in life, resiliency factors, meaningful relationship with peers, supportive adult in school or home (youth))
- social capital (connections to formal or informal social groups or associations, neighborhood cohesion, trust, safety).

**Recommendation 2: a.** That a checklist/template of evidence-based measures of various aspects of vulnerability be developed and incorporated in the medical

record and patient histories in practices. **b.** With the wide use of EHRs, working with larger systems to add flexibility to incorporate this checklist and active genograms within EHRs. **c.** That case presentations or seminars that are case based include data from individual vulnerability measures in discussion about diagnosis and management, particularly of chronic disease management.

Although increasingly patient centered, clinical medicine is quite unaware of the concepts of practice populations or population health. Knowledge of the population cared for by a clinic and how it compares or not with the population in the neighborhood or region is an essential component for identifying and understanding vulnerability. Learners should be given and learn to find basic demographic information about their practice population, using clinical information warehouses, and the community, using public health and government data.

For example, the clinic where we work has a racial/ethnic mix that is 25% African American, 25% Latino and 8% Asian, has a Medicaid rate of 35%, a Medicare rate of 10%. Sixty-five percent of the patients come from 3 zip codes and 6 census tracts, that the mean income level of those zip codes is 25% lower than the community as a whole, that the education level is 40% lower in those zip codes, that there are two elementary schools and 15 churches in this zip code, that there are cross-town transportation nodes 2 blocks from the clinic, and so forth. This population also has higher than average rates of teen pregnancy, diabetes, hypertension and obesity compared to the county as a whole.

Teaching clinical medicine in that environment requires regular reexamination of patient population and a recognition by clinicians of how their individual patients are similar to or differ from the population of the clinic and the community. This, again, requires asking learners to consider this population context when discussing cases and making management plans.

**Recommendation 3:** That all practices where primary care professionals train be required to have basic population health data from the practice and from the community available for all clinicians and that students and residents be oriented to these data on a regular basis and be asked to understand the vulnerable populations that might emerge from those data.

## ENDNOTES

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# APPENDIX C – CLINICAL INNOVATION, DISPARITIES, AND THE CHANGING EPIDEMIOLOGY OF CHILDHOOD: IMPLICATIONS FOR PRIMARY CARE TRAINING

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Paul H. Wise, M.D., M.P.H., Stanford University

**P**ediatric training must anticipate pediatric practice, and pediatric practice must always respond to pediatric need. This observation suggests that an assessment of the future of pediatric education should be guided by an exploration of trends in child health.

The contention of this discussion is that changes in the epidemiology of child health problems are of such a large scale that it will not only require changes in the *content* of pediatric care but will also increasingly require changes in the *structure* of pediatric care as well.<sup>1</sup>

## CHANGES IN THE EPIDEMIOLOGY OF CHILDHOOD

### Trends in Acute Illness in Children

There has not been a major change in the incidence of acute illness in American children over the past 40 years. Data from the National Health Interview Survey suggest that in 1962, the average was approximately 2.9 acute illnesses per year, a figure that was approximately 20 percent higher than the 2000 estimate. This modest reduction was due to moderate declines among school-age children and adolescents, while the figure for young children remained remarkably stable. During both time periods, minor viral infections, particularly upper respiratory illness, were the most common diagnoses.

While acute illnesses among school-aged children fell moderately, the number of days lost from school associated with these illnesses fell far more dramatically over the same time period. The reasons for this elasticity between illness and school absence cannot be ascertained from this data source; however, it may have been due to a higher threshold for absence secondary to increased maternal employment.

### Trends in Chronic Illness in Children

Trends in the prevalence of chronic illness among American children have been difficult to ascertain due

to the variability in the definition and diagnosis of chronic illness over the past several decades. Indeed, estimates of childhood chronic illness have varied from less than 5 percent to more than thirty percent.<sup>2</sup> The lower estimates tend to include only those children with diagnoses associated with significant disability or need for specialized services or equipment. The estimates that approach one-third of all children include all chronic conditions regardless of their impact on child well-being, including allergic conditions, serous otitis media, and acne.

Of greatest relevance to the issue of pediatric practice, however, are likely to be estimates of children with chronic disorders that require an elevated use of health services. This dual requirement—the presence of a chronic disorder and elevated service use—has been used by the Maternal and Child Health Bureau as a basis for a consensus definition of a subset of children with chronic conditions: “children with special health care needs.”<sup>3</sup> Several recent efforts to operationalize this definition suggest that somewhere between 15 and 20 percent of all American children could be considered to have a special health care need.<sup>4</sup>

Some children are more profoundly affected by their chronic condition than others. One study estimated that approximately 0.7% percent of children were not able to conduct their expected, age-appropriate activity (e.g. play for preschoolers, school for school-aged children); another 4 percent were limited in some form in conducting these major activities; and 1.8 percent were limited not in their expected major activity but in other activities. Therefore, a total of 6.5 percent of all American children were estimated to be limited, or disabled, by their chronic illness in some manner.<sup>5</sup>

Not surprisingly, the 15 to 20 percent of children categorized as having special health care needs have elevated use of health services. They are more than 3 times more likely to be confined to bed due to illness, visit a physician 2.5 times as often, and average

more than 5 times as many days in the hospital, than children without such special health care needs. For the estimated 6.5 percent of children with a reported disabling chronic condition, their average number of contacts with physicians was more than 3 times the average for all children without a disabling condition. It was estimated that some 11.4 percent of children with a disabling condition were hospitalized in the year prior to the survey, while 2.8 percent of children without such conditions were hospitalized over the same period, accounting for an eight-fold difference in days of hospitalization.<sup>4,5</sup>

When comparisons over time have been conducted, large increases in the prevalence of chronic childhood illnesses have been observed.<sup>6</sup> Data from the NHIS has documented a rise in reported activity limitations or disabilities among children from 2.6 percent in 1969 to 6.4 percent in 1996. There is some circumstantial evidence that much of the increase during the 1970's was concentrated in less severe conditions and were likely due to reporting artifacts and changes in perceptions. However, since that time, large increases in the reported prevalence of asthma and behavioral and developmental problems have accounted for the bulk of the rise in chronic conditions.

## THE DICHOTOMIZATION OF CHILD HEALTH: IMPLICATIONS FOR PEDIATRIC PRACTICE AND TRAINING

Taken together, the morbidity and mortality trends outlined above suggest that as absolute rates of hospitalization and death among children have declined they have increasingly been concentrated in children with chronic illness.<sup>1</sup> These trends suggest that the vast majority of children in the United States are increasingly unlikely to experience a serious illness while a relatively small group of chronically ill children accounts for an increasingly large portion of all serious childhood illness. Indeed, according to recent national data, approximately 80% of all children's health care expenditures are attributable to 20% of children.<sup>7</sup>

This functional divergence, or *dichotomization* of pediatric risk, may raise important questions regarding the structure of pediatric practice, and therefore, pediatric training. Pediatric practice has always been dichotomized to a certain extent. Pediatricians have always cared for children who were generally well and some with chronic illness. However, now more than

ever, children who are generally well are extremely unlikely to ever experience a serious acute illness. This diminished risk is only likely to fall further as new preventive interventions directed at serious gastrointestinal and respiratory viral infections are developed.

If pediatric practice must reflect the epidemiology of childhood illness, risk dichotomization will ultimately be expressed as practice dichotomization. Increasingly, the vast majority of children will require the provision of immunizations, anticipatory guidance, and general counseling. Another far smaller group of children will increasingly require the often complex management of chronic medical and behavioral illness.

The question is whether traditional pediatric practice is well suited to address this growing dichotomization of pediatric need? Are current residency training requirements reflective of these shifts in pediatric need? Is a pediatric residency necessary to care for the vast majority of children at increasingly low risk of serious illness? This discussion cannot answer these questions definitively, of course. However, the evolving dichotomization of pediatric illness and mortality will undoubtedly put increased pressure on current practice and training structures.

### Dichotomization and Quality

The quality of care for both well and chronically ill children may be increasingly threatened if the dichotomization of pediatric practice is not addressed. The problem lies in that it is difficult to implement the requirements for high-quality care for children with complex needs in practices dominated by overwhelming numbers of children who need only well child care. Indeed, the central requirements of high-quality well child care demand their own systems of high-quality provision.<sup>8</sup> These are most often focused on assuring quality in a high-volume setting, such as immunization data bases, documentation for schools and other institutions, and responding to screening procedures or tests. These are critical elements of child health care and providing them can be the source of profound professional reward. However, the requirements for their high-quality provision may, in some important ways, be distinct from those necessary to care for children with complex medical needs.

The management of children with chronic illness or special health care needs will also increasingly require specialized expertise and commitment. This will mean more than training early in one's pediatric career. Rather, it will require an ongoing capacity to manage children

with disorders that are constantly being addressed by new technical procedures and medications.

## **Dichotomization and Pediatric Training**

The logic of practice dichotomization suggests that pediatricians, and therefore, pediatric training programs, will be increasingly pulled in two directions: the provision of care to the vast majority of children who have a diminishing risk of ever getting seriously ill and the provision of care to children with chronic illness and complex medical need. This tension, of course, has existed for many years. The argument here, however, is that its dimensions are growing at an accelerating pace and that it has, in most respects, not been adequately addressed by the pediatric community.

Simply put, the remarkable technical strides that pediatrics has made over the past 50 years may ultimately demand a profound change in the current structure of the profession, a structure that was developed in the 1950's and 1960's when the epidemiology of childhood was very different. The question now is whether general pediatric practice can continue to be increasingly dichotomized without some form of cleavage.

The challenge to pediatric training programs is that they must anticipate the answer to this question. Current training programs are being pulled in two directions: greater attention to general practice experiences,<sup>9</sup> and for greater subspecialty training.<sup>10</sup> This is a direct reflection of the dichotomization in pediatric epidemiology.

There may be an impulse to frame this dichotomization as supporting a “two track” pediatric residency strategy in which residents would differentiate into programs emphasizing either primary care or subspecialty training. However, dichotomization may have advanced too far to support such an approach.

Primary care is not the same as well child care. In the context of the growing importance of chronic illness, primary care will increasingly mean caring for children with chronic disorders and complex medical needs in community settings. This must also include serious behavioral, learning, and psychiatric disorders. However, this is training to improve the capacities of pediatricians to deal with chronic disorders, not well child care. Similarly, controversies regarding the proper mix of “outpatient” and “inpatient” training also seem a particularly unhelpful way to address the requirements of pediatric dichotomization.

If nothing else, dichotomization blurs the distinction between outpatient and inpatient expertise.

Children with chronic illness and particularly those with complex medical disorders often require hospitalization. Given the pressures to shorten hospital stays, these children are often discharged with complicated outpatient followup regimens that require close interaction between inpatient and outpatient staff. Children with chronic health problems also often require the intensive management of acute exacerbations in outpatient settings, often with the involvement of hospital-based subspecialists and emergency departments. The only way this kind of care can be framed is as being intensely transitional, with movement back and forth from hospital to out of hospital and back to hospital settings, sometimes over the course of just a few hours.

The tension is less between inpatient and outpatient care, or between primary and tertiary care. The epidemiology suggests that it lies more directly between the provision of routine well child care and the provision of integrated care to children with chronic disorders and complex medical needs.

## **The Emergence of Pediatric Hospitalists**

The growing concentration of hospital care devoted to chronically ill children with complex health needs will also require a change in the expertise of pediatricians responsible for inpatient care. Traditional patterns of inpatient coverage by pediatricians in busy practices or short-term academic faculty is already giving way to pediatricians with training and experience caring for the complex and often urgent needs of hospitalized children with serious chronic conditions. This pressure has clearly been expressed as the development of pediatric hospitalists, pediatricians with dedicated responsibility for inpatient care, care that is increasingly dominated by chronically ill children.<sup>11</sup>

However, the blurred distinctions between inpatient and outpatient care imply that high-quality hospitalist care will require deep expertise with the outpatient management of complex pediatric patients and the providers and systems in place for their care upon discharge. Pediatric departments will increasingly find that the best guarantee of efficient high-quality inpatient care is the development of integrated programs that transcend traditional inpatient/outpatient barriers and ensure that hospitalists and intensivists who may come to know many chronically ill children extremely well interact seamlessly with pediatricians responsible for the care of these children in community settings. From this perspective, the true promise of the move-

ment toward hospitalists may lie in their capacity to practice and ultimately to teach a deep respect for the transitional nature of pediatric care in the years to come.

## Dichotomization and Disparities in Child Health

Over the past 3 decades the area of child health that has experienced the greatest growth in social disparities has been chronic illness.<sup>1</sup> This has been the result of three related trends:

- Increasing prevalence of chronic illness will increasingly be required to engage or even help institute integrated systems of care
- Growing clinical capability to treat chronic illness
- Continued social differences in access to this clinical capability

Differences in provision will most likely result in differences in outcomes when clinical efficacy is high. Services for children with chronic illness are complex, which make them particularly susceptible to access effects. Poor children with asthma are far less likely to be provided with maintenance suppressant therapy, such as inhaled steroids.<sup>12-14</sup> Poor children with cystic fibrosis have worse outcomes than their wealthier counterparts.<sup>15</sup> African American children with Down's Syndrome have a profoundly shortened life expectancy.<sup>16</sup>

This ultimately means that a focus on disparity reduction, on serving poor communities, will increasingly demand the training of pediatricians with meaningful expertise in caring for children with chronic illness. Although well child care for poor children remains an essential requirement, of greatest concern today is unequal access to highly efficacious care for children with chronic illness.

## SUMMARY

This discussion contends that pediatric training will have to respond to a major restructuring in pediatric practice. This restructuring will be the result of unprecedented shifts in the epidemiology of childhood. Children with chronic illness account for a growing portion of pediatric care and resources and their needs have become increasingly distinct from those of generally well children. Chronic illness is also accounting for a growing portion of social disparities in child health outcomes.

These changes in patterns of child illness will undoubtedly require changes in how pediatric care is delivered. The dichotomization of pediatric need is generating new tensions in the traditional practice of trying to serve the needs of chronically ill children in the midst of providing care to high volumes of well children. In addition, hospital-based care is increasingly dominated by the complex needs of children with serious chronic disorders. This has made it difficult for community-based general pediatricians to provide regular hospital care and generated a growing need for hospitalists with special expertise in managing chronically ill children in inpatient settings.

The challenge is to develop workforce strategies and training programs that can address this highly dynamic environment. While any change in traditional pediatric training approaches is likely to generate controversy, this discussion suggests that the best guarantee of ensuring that this change will prove constructive is a fundamental respect for the evolving epidemiology of pediatric need.

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# APPENDIX D – HEALTH DISPARITY, THE HEALTHCARE CRISIS OF THE 21ST CENTURY: WHAT HEALTH PROFESSIONALS SHOULD KNOW

Rubens J. Pamies, M.D., University of Nebraska

## INTRODUCTION: THE NEW AMERICAN PUBLIC

The minority population in America is growing rapidly, but too few health professionals—including medical educators—are responding quickly enough to provide equal treatment for all racial and ethnic groups. According to an Institute of Medicine (IOM) report on unequal treatment, racial and ethnic minorities tend to receive a lower quality of health care than non-minorities, even when access-related factors such as patients' insurance status and income are controlled.<sup>1</sup> Other factors that influence equitable health care are racial and ethnic bias and interaction between patients and their physicians.[1] To address these factors, the IOM recommends that training programs incorporate curriculums that will help healthcare providers gain the skills needed to navigate cross-cultural interaction.

As evidenced by U.S. Census Bureau information, a shift is taking place in the population of the United States—away from immigrants of European origin and toward newcomers from Latin America and Asia. As a result, the U.S. Census projects that almost half of the U.S. population in the year 2050 will be minorities. The highest increases will be among Hispanics and Asians/Pacific Islanders. By the year 2050, 80 million people in the United States will be from immigrant groups that arrived after 1994; and they will make up 25% of the U.S. population.<sup>2</sup> The largest growth in the African-American population is occurring in the Southeast, while the greatest increase in Hispanics can be found on the West Coast and in the Southwest.

## STATUS OF HEALTH DISPARITIES IN THE UNITED STATES

Factors in three tiers can influence a person's health. First, at the individual level, factors include: socioeconomic status; poverty; environmental conditions; education level; employment; and lifestyle choices. At the

same time, multiple factors affect healthcare delivery: appropriateness of care; insurance; cultural competency; patient-provider communication; ethnic/racial predilection of diseases; provider bias; patient preferences; and patients' adherence to a treatment plan. Finally, the factors involved in healthcare access are: finances; availability of providers; proximity of providers and transportation; the patient's "medical home"; language barriers; patients' cultural preferences; healthcare workforce diversity; legal barriers; health literacy; and distrust. [1]

To address these disparities, the two overriding goals of the nation's health plan, *Healthy People 2010*, are to: 1) increase the quality and years of healthy life and 2) eliminate health disparities. At the midway point toward 2010, the nation has begun to measure progress and finds that, almost without exception, minority Americans still fare worse than White Americans. For example:

- African-Americans exceed Whites in age-adjusted mortality rates.<sup>3</sup>
- The death rate from HIV/AIDS is much greater among Blacks. The rate per 100,000 people is 16 for Whites, 115 for Blacks, and 56 for Hispanics.<sup>4,5</sup>
- Fewer Blacks and Hispanics than Whites receive vaccination for influenza and pneumococcal. For those aged >65 years, vaccination rates for non-Hispanic Whites are 69% and 64.8%, respectively), more than those for non-Hispanic Blacks (50.6% and 44.5%, respectively) and Hispanics (54.8% and 44.4%, respectively).<sup>6</sup>
- The cancer death rate is higher for Blacks, who have a 30% higher death rate from all cancers combined than Whites.<sup>7</sup>
- Deaths from cardiovascular diseases are greater among Blacks than Whites, with rates for Black males at 490 per 100,000 compared to 372 per 100,000 for White males.<sup>8,9</sup>

- The diabetes-related death rate is more than twice as high among Blacks as it is among Whites (29% vs 12%, respectively).<sup>10</sup>

## Infant Deaths And Low Birth Rates

The infant mortality rate among African Americans is 14.7 per 100,000, which is more than double the rate among Whites (6.3 per 100,000) (Figure 1).<sup>11</sup> While Whites are nearing the 2010 goal of 5.7 infant deaths per 100,000, the African-American infant mortality must be reduced at a rapid pace to reach the same goal. [11] In addition, for low birth-weight babies (less than 2,500 grams) and very low birth weight (less than 1,500 grams), the rates for African-American babies are more than twice the rates for White babies. [11]

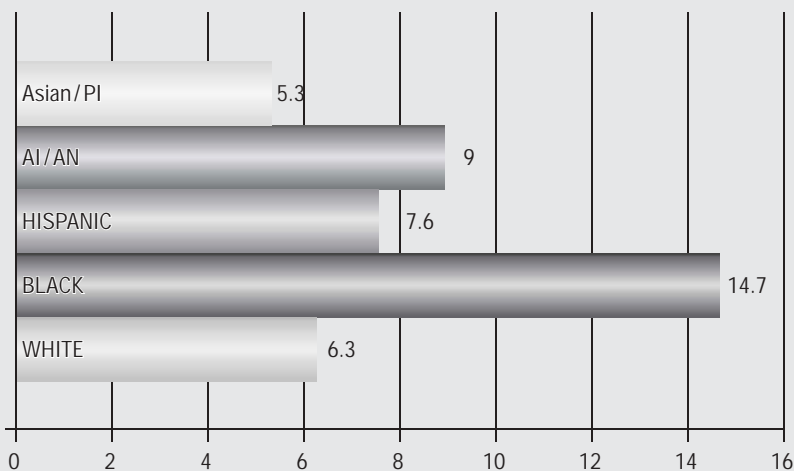
Racial disparity also exists in pre-term (less than 37 weeks of gestation) and very pre-term (less than 32 weeks) births. The rate of African-American pre-term births is 17.7%, compared with 11% for Whites and for very pre-term births, the 4% rate for African Americans is almost three times the rate for Whites (1.6%). [11] Almost 14 Black babies die for every 1,000 live births. [11] (Figure 2) This rate is followed by Native Americans, Puerto Ricans, and Hawaiians, while Filipinos, Whites, and Mexicans have reached or are very near the 2010 goal and Cubans, Japanese, and Chinese have already met the goal. [11] (Figure 3)

## Possible Causes Of Racial And Ethnic Disparities In Birth Outcomes

In determining a solution to the disproportionate rates of poor birth outcomes among minorities and especially African Americans, scientists have investigated possible causes; key findings are summarized below:

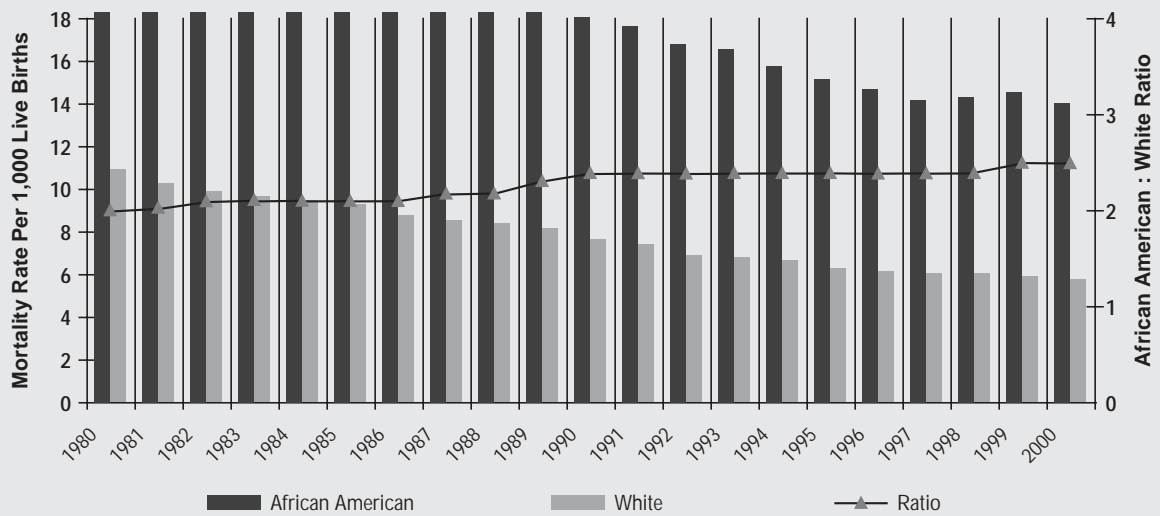
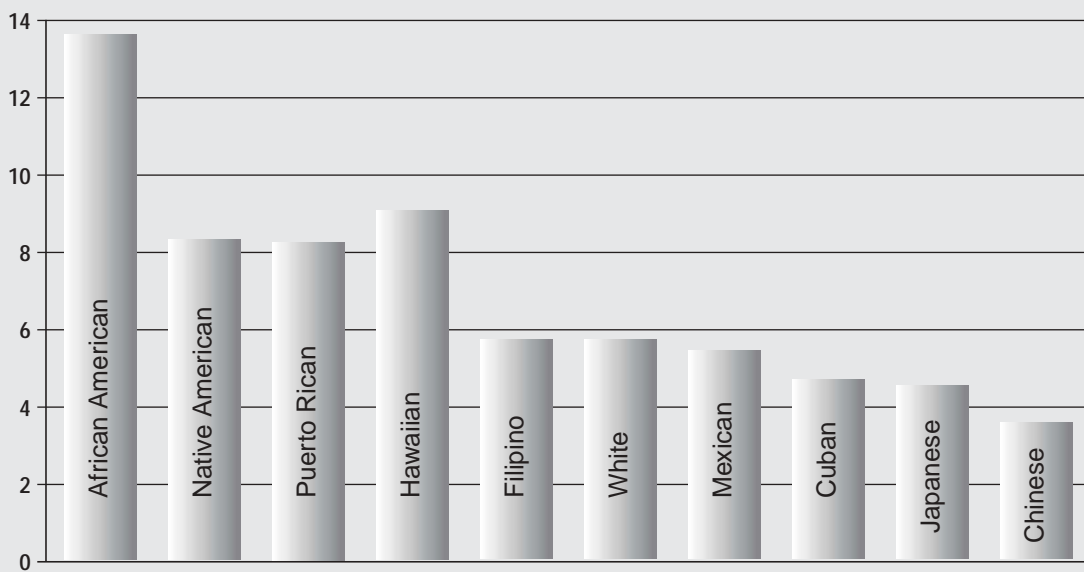
- Race has no clear biologic or genetic basis. Genetic diversity appears to be a continuum, with no clear breaks delineating racial groups.<sup>12</sup> Many birth outcomes have no clear genetic basis. Mexican Americans born in Mexico have a 3.9% incidence of low birth weight babies per 1,000 live births, but Mexican Americans born in the United States have an even greater occurrence (5.5%).<sup>13</sup>
- Among all races, the incidence of low birth weight and nativity is greater for those born in the United States (7.3% per 1,000 live births) than for foreign-born infants (5.3%). The same holds true for African Americans (14.2% for U.S.-born African Americans and 9.2% for foreign-born African Americans).<sup>14</sup>
- The connections between behavior (specifically, cigarette smoking) and infant mortality are contradictory. African-American women (9.7%) smoke less than White women (14.3%),<sup>15</sup> but African Americans have higher infant mortality (14.7%) than Whites (6%). The infant mortality rate among African-American women who do not smoke cigarettes is 12.8 for every 1,000 live births while the rate is 9.4 for White women who smoke. [15]
- The prenatal care rates are about the same for all racial and ethnic groups. The percentages of women who receive prenatal care in the first trimester are 85% of Whites, 84% of Asians/Pacific Islanders, 74% of Hispanics, 74% of African Americans, and 70% of Native Americans. [14]
- Education does not seem to narrow the gap in infant health outcomes. Even African-American women with >16 years of schooling did not have infant mortality rates as low as that of Whites with <9 years of schooling. [14]

**Figure 1. Infant Mortality Rates, per 100,000 (2004)**



- In one study, researchers found that the presence of CRH (corticotrophin releasing hormone associated with stress management) is higher in African-American women than in White women at all stages of pregnancy. Stress caused by factors such as money, work, health, abuse, safety, and racism can result in pre-term births and intrauterine growth retardation, which are linked to low birth weight and infant mortality.<sup>16</sup>

- Low birth weight and very low birth weight increase as Black women age, but the same is not true for White women. Also, as African-American women in the lowest socioeconomic levels age, they are

**Figure 2. Infant mortality for African Americans and Whites, U.S. (1980-2000)****Figure 3. Racial and ethnic disparities for infant mortality, per 1,000 live births**

more likely to have babies with low birth weight. The likelihood of having low birth weight babies is about the same for African-American women of average and high socioeconomic status. African-American women are more likely than White women to smoke cigarettes as they grow older (ages 25 and 30).<sup>17</sup>

## ORAL HEALTH DISPARITIES

The disparities in health care are most evident in dentistry as research has demonstrated:

- More than one-third of the U.S. population (100 million people) has no access to community water fluoridation.<sup>18</sup>

- More than 108 million children and adults lack dental insurance, a figure that is 2.5 times those who lack medical insurance.[18]
- 25% of poor children do not see a dentist before entering kindergarten. [18]
- African Americans make up 2.2% of all U.S. dentists; Hispanic Americans, 2.8% ; and Native Americans, .2%. [18]

Unfortunately, the problem in dentistry is unlikely to improve in the near future. In 2002-2003, only 5.1% of students at 56 dental schools in the United States were African American and only 6.0% were Hispanic/Latino.<sup>19</sup>

## HEALTH DISPARITY IN THE IMMIGRANT POPULATION

Immigrant populations continue to expand throughout the United States but are concentrated in specific regions such as south Florida, Texas, and California. For these immigrant groups, 10 common problems affecting health are: domestic violence; unemployment and lack of insurance; language barriers; fear; lead poisoning; HIV/AIDS; tuberculosis; late-diagnosed breast and cervical cancer; untreated diabetes and cardiovascular disease; and lack of immunization.<sup>20,21</sup>

Immigrants are at increased risk for other health problems such as chronic Hepatitis B and rubella (German measles), as well as intestinal parasites, malaria, typhoid fever, malnutrition (iron foliate and B12 deficiencies), asthma, dental disease, and mental health problems. A study of immigrant child population in San Francisco showed that 77% of the children needed emergency dental care.<sup>22</sup>

Several barriers prevent immigrants from getting optimum care. Immigrants often are seen in a clinic

rather than in a private physician's office and may receive emergency medical care later rather than sooner. Translators may not be available to improve communications between the patient and the provider. Laws such as the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (popularly known as "welfare reform") have limited public benefits even to legal immigrant adults and have encouraged States to deny services to undocumented persons. [21]

## THREE SOLUTIONS FOR IMPROVING MINORITY HEALTH

### 1 – Establishing National Guidelines And Standards For Culturally Competent Care

Cultural differences between providers and patients have an effect on the provider-patient relationship. How patients feel about the quality of that relationship is directly linked to patient satisfaction, adherence, and subsequent health outcomes.<sup>23</sup> Certain approaches

**Table 1. Standards For The Delivery Of Culturally Competent Care**

FOCUS	STANDARD OF CARE
Communication Methods	Identify the patient's preferred method of communication. Make arrangements for a translator if needed.
Language Barriers	Identify potential verbal and nonverbal language barriers. List possible compensations.
Cultural Identification	Identify the patient's culture. Contact your organization's Culturally Specific Support Team (CSST) for assistance.
Comprehension	Double check: Do the patient and/or the family understand the situation?
Beliefs	Identify religious/spiritual beliefs. Make appropriate support contacts.
Trust	Double check: Do the patient and/or the family trust the caregiver? Remember to watch for both verbal and non-verbal cues. If trust is not evident, seek advice from the CSST.
Recovery	Double check: Do the patient and/or the family have misconceptions or realistic views about the caregivers, treatment, or recovery process? Make necessary adjustments.
Diet	Address culture-specific dietary considerations.
Assessments	Conduct assessments with cultural sensitivity in mind. Watch for inaccuracies

should be standard and national guidelines should be established to incorporate major areas of focus illustrated in Table 1.

## 2 – Improving The Healthcare Educational Pipeline And Incorporating Cultural Proficiency Curriculum Into All Medical Training

At the current rate of minorities in the medical school pipeline, the demand for healthcare by the rapidly growing minority population in the next 50 years far exceeds the manpower available to provide culturally sensitive healthcare services. Blacks are under-represented in many health professions, particularly in the areas of dentistry (only 3% black), dental hygiene (2%), occupational therapy (3%), speech therapy (4%), and pharmacy (3%). As seen in Table 2, the overall percentages in selected health professions are 71% White and 12% Black.<sup>24</sup>

Major healthcare employment opportunities will continue to arise in this decade. For example, the need for personal and home care aides will increase

62.5% between 2000 and 2010. Similar increases are projected for medical assistants (57%), home health aides (47.3%), pharmacy technicians (36.4%), dental assistants (37.2%), and registered nurses (25.6%).<sup>25</sup> To meet this need, the United States is importing physicians from countries around the world, but only a small percentage are from the Spanish-speaking population, the fastest growing population in the United States. The two countries with the most medical graduates in the United States are India and the Philippines.<sup>26</sup>

While the need for more minorities in the health profession is great, specific training in cultural competence at medical schools continues to be lacking. According to recent studies, only 9% of the nation's medical schools offer a course to address cultural competency, and fewer than half of the schools offer coursework in health disparities.<sup>27,28</sup>

Core components of a cross-cultural curriculum should include: strategies for eliminating stereotyping and bias; perception of health and illnesses; communication and language; knowledge of health disparities; understanding the role of culture in health care; and cultural competency training. The recently released

**Table 2. Distribution Of Selected Health Professions By Race And Ethnicity**

	<i>Non-Hispanic White</i>	<i>Non-Hispanic Black</i>	<i>Am Indian/Asian Pacific Islander</i>
Clinical laboratory technologists & technicians	67%	18%	1% / 7%
Dentists	86%	3%	0% / 9%
Dental hygienists	96%	2%	0% / 0%
Dietitians	71%	19%	0% / 5%
Health records technologists & technicians	73%	18%	0% / 7%
Occupational therapists	88%	3%	0% / 1%
Radiology technicians	80%	11%	0% / 1%
Registered nurses	87%	5%	0% / 4%
Respiratory therapists	80%	12%	0% / 3%
Social workers	66%	23%	1% / 2%
Speech therapists	94%	4%	0% / 0%
Pharmacists	79%	3%	0% / 14%
TOTAL RESIDENT U.S. POPULATION	71%	12%	1% / 4%

*Multicultural Medicine and Health Disparities*, is designed to provide some of these components and assists healthcare students and practitioners in delivering skilled, appropriate care to all patients, regardless of ethnicity, country of origin, cultural history, or access to services. It contains practical advice and case histories to improve minority health through improved understanding of special healthcare needs.

### **Tips For Healthcare Professionals Serving Minority Populations**

Researchers have designed models for cultural competency that can be applied to everyday practice. For example, the LEARN model of cultural competency suggests these steps for patient care:

**L**istening to the patient's perspective.

**E**xplaining and sharing your perspective.

**A**cknowledging differences and similarities between the two perspectives.

**R**ecommending a treatment plan.

**N**egotiating a mutually agreed-upon treatment plan.

To assess readiness to serve culturally diverse populations, healthcare professionals might answer the questions in the following checklist:

- Do you speak another language?
- Do you work with staff members who speak another language?
- Do you offer health materials and/or appointment materials in other languages?
- Do you have a list of community resources that serve a variety of ethnic groups?
- Do you ask patients about their use of alternative health practices?
- Do you ask about their use of home remedies, medicines, or treatments?
- Have you attended a cultural diversity seminar/workshop in the past year?
- Does your screening procedure include cultural lifestyle issues such as dietary practices, health beliefs, home remedies, medicines, or other treatments?
- Do you have an interpreter system for non-English-speaking patients?

- Do you know key words and phrases in the languages of your patients? Good morning!/How are you?/Thank you!

### **3 – Developing Funding Sources To Support Culturally Competent Care**

To improve minority health through the use of culturally competent care, new resources are needed to assist hospitals, physicians' offices, clinics, and community health centers to provide this comprehensive care.

#### **Resources for delivering appropriate care to minority populations**

- The Bureau of Primary Health Care of the U.S. Department of Health and Human Services (DHHS) Cultural Linguistically Appropriate Health Care Services (CIAS);
- Cultural brokers – bicultural or bilingual individuals who can assist in the delivery of culturally appropriate care;
- Mental Health for Immigrant Program (MHIP)
- National Center for Cultural Competency (NCCC).

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# APPENDIX E – DENTAL AND INTERDISCIPLINARY WORKFORCE APPROACHES TO ORAL HEALTH CARE FOR VULNERABLE AND SPECIAL-NEEDS POPULATIONS

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Burton L. Edelstein, D.D.S., M.P.H., Columbia University

This conceptual contribution to the BHP<sub>r</sub> Title VII report on *The Role of Title VII, Section 747 in Preparing Primary Care Practitioners to Care for Underserved and Other High-Risk Groups and Vulnerable Populations* focuses on dental and interdisciplinary workforce approaches to improving oral health services, specifically services that meet the needs of vulnerable and special-needs populations and individuals. This piece builds upon recommendations made in the 2002 Advisory Committee on Training in Primary Care Medicine and Dentistry report on primary care-public health interfaces and the Committee’s 2003 report on cultural competency by focusing attention on individuals with special healthcare needs including those made vulnerable by social as well as personal health liabilities.

A Surgeon General’s 2001 report on oral health explains the importance of oral health by noting that “Oral diseases are progressive and cumulative and become more complex over time. They can affect our ability to eat, the foods we choose, how we look, and the way we communicate. These diseases can affect economic productivity and compromise our ability to work at home, at school, or on the job.”<sup>1</sup> Because oral health status and availability of dental care vary considerably across individuals and subpopulations, the consequences of oral diseases also vary widely. Whether interfering with oral function, exacerbating other diseases, limiting employment opportunities or job performance, or negatively impacting self-esteem, poor oral health is consequential to the day-to-day lives of those who are disproportionately affected.

## I. ORAL HEALTH NEEDS OF VULNERABLE POPULATIONS AND INDIVIDUALS IN THE U.S.

Title VII is the only U.S. Federal program dedicated to funding primary care provider workforce education and training.<sup>2</sup> As such, it is uniquely positioned to develop and

implement workforce approaches that address underlying population needs—needs that have been well documented in a series of Federal and academic analyses.

Unmet oral health needs in the U.S. appear, in the aggregate, to be at the lowest levels since the Federal government began tracking oral disease rates. As a collective, the country’s population today enjoys the lowest rates of dental caries (tooth decay), periodontitis (gum disease), edentulism (total tooth loss), and oral and pharyngeal cancer since these Federal surveillance efforts were instituted. But this finding fails profoundly to recognize the tremendous ongoing oral disease burden borne by the U.S. population and fails equally to recognize significant and consequential disparities in oral health among U.S. subpopulations. The following data illustrate that each successively narrow subpopulation of Americans with social or health liabilities has successively worse oral health and more limited access to primary dental care providers. In short, groups can be ranked in order of decreasing status from the population at large to minority and low-income groups, to groups of very young children and institutionalized elders, to groups of chronically ill, and finally to people with special needs.

The CDC 2005 *Surveillance Summary* on oral health<sup>3</sup> and the USDHHS 2004 *Healthy People 2010 Progress Review on Oral Health*<sup>4</sup> confirm earlier findings of the 2000 U.S. Surgeon General’s Report, *Oral Health in America*,<sup>5</sup> that oral diseases remain highly prevalent, highly disparate, and significantly consequential. The *Surveillance Summary* finds that “racial/ethnic minorities, those with lower incomes, lower educational level and current smokers across all age groups have larger unmet [dental] needs compared with their counterparts.” The *Progress Review* reports that the “prevalence of oral disease remains very high in the United States” and that “profound disparities among population groups still exist in levels of oral disease and in receipt of preventive and restorative

care.” Unfortunately, closer analysis reveals that these twin disparities—in oral health status and dental care access—are intimately related as subpopulations that experience the greatest levels of disease also experience the lowest levels of care.

Table 1 shows representative findings of the Healthy People 2010 *Progress Review* for common oral conditions in subpopulations and typifies the disparities by race and education (as a proxy for socioeconomic status) reported by the *Surveillance Summary*.

**Table 1. Disparities in Oral Health, U.S. (Source: Healthy People 2010 *Progress Review*, 2004)**

<i>Subpopulation</i>	<i>Prevalence</i>	<i>HP2010 Goal</i>	<i>Trend</i>
<b>Dental Caries: % 2-4 Year Old children with untreated disease</b>			
<b>All 2-4 year olds</b>	20% (2000)	9%	Worse: 25% increase from HP2010 baseline (1988-94)
<b>Head of Household's Education</b>			
Some College	9% ('88-'94)	9%	Not reported
High School Graduate	16% ('88-'94)		
Less than High School	26% ('88-'94)		
<b>Race/Ethnicity</b>			
White	11% ('88-'94)	9%	Not reported
Black	25% (2000)		Worse: 14% increase
Mexican-American	32% (2000)		Worse: 7% increase
Am Indian/Alaska Native	68% ('99-'00)		Not reported
<b>Periodontitis: % Adults 35-44 with destructive periodontal disease</b>			
<b>All 35-44 year olds</b>	20% (2000)	14%	Not reported
<b>Education</b>			
Some College	15% ('88-'94)		
High School Graduate	28% ('88-'94)	14%	Not reported
Less than High School	35% ('88-'94)		
<b>Race/Ethnicity</b>			
White	20% ('88-'94)		
Black	33% ('88-'94)	14%	Not reported
Mexican-American	25% ('88-'94)		
Am Indian/Alaska Native	59% ('99-'00)		
<b>Edentulism: % Elders 65-74 with complete tooth loss</b>			
<b>All 65-74 year olds</b>	25% (2002)	20%	Better: 4% reduction since 1997
<b>Education</b>			
Some College	13% (2002)		No change since 1997
High School Graduate	23% (2002)	20%	Better: 12% reduction since 1997
Less than High School	43% (2002)		Better: 10% reduction since 1997
<b>Race/Ethnicity</b>			
White	23% (2002)		Better: 8% reduction since 1997
Black	34% (2002)	20%	Better: 13% reduction since 1997
Latino/Hispanic	20% (2002)		Better: 17% reduction since 1997
Am Indian/Alaska Native	25% ('99-'00)		Not reported
<b>Oral/Pharyngeal Cancer: % with Cancer who were NOT detected early</b>			
<b>All</b>	65% (2000)	50%	Worse: 3% fewer cases diagnosed early since 1990-95
<b>Race/Ethnicity</b>			
White	63% (2000)		Worse: 5% fewer diagnosed early
Black	79% (2000)	50%	Worse: 5% fewer diagnosed early
Latino/Hispanic	65% (2000)		Better: 9% more diagnosed early
Am Indian/Alaska Native	76% (2000)		Worse: 4% fewer diagnosed early

More important to the Title VII’s mission than disparities in oral health are disparities in dental care which also present as a function of age and socioeconomic status. Extensive analyses of the Federal Medical Expenditure Panel and other nationally representative sources confirm low dental care utilization by young children and frail elders, low-income subpopulations at all ages (despite comprehensive Medicaid coverage for children under age 21), people with limited education, and immigrant/migrant/homeless populations. Table 2 illustrates representative disparities in dental care from these analyses.

MEPS also reports on the percentage of U.S. families “in which a member was unable or delayed in receiving needed health care in 2003.” Among Americans who tried but could not obtain dental care or had to delay dental care (10.5% overall), lack of access was related to young age, low education, being uninsured

or having only public insurance (typically Medicaid), low income, and having self-perceived poor overall health. Comparing reasons for delayed or missed dental care, Americans reported lack of affordability 1.6 times more often for dental than for medical care. This is consistent with a Healthy People *Progress Review on Oral Health* finding that Americans are less than 40% as likely to have dental as medical insurance and a Medicaid analysis finding that only 7 States cover reasonably comprehensive adult dental care in their Medicaid program as of 2005.<sup>9</sup> Analysis of Commonwealth Fund’s nationally representative 2001 insurance and disparities surveys<sup>10</sup> revealed that not having insurance coverage markedly increases the risk of delaying dental care as nearly half of working-age adults who are uninsured (48%) report delaying dental care because of cost compared with only 14 percent who have dental coverage. One-in-seven uninsured working age adults (15%) also reports

**Table 2: Disparities in Dental Utilization, U.S. MEPS 2002<sup>6</sup>**

<i>Subpopulation</i>	<i>Utilization Rate</i>	<i>Comment</i>
<b>Dental Visits Total</b>		
All	43%	MEPS reports lower utilization rates than NHANES and NHIS <sup>7</sup>
<b>Dental Visits by Age</b>		
0-4 year olds	16%	Children under the age of 5 have substantially low visit rates despite dental caries becoming established as a disease process __at this age. While all elders enjoy visit rates at the national average, frail/institutionalized elders have low visit rates. <sup>8</sup>
5-17 year olds	55%	
18-24 year olds	37%	
25-44 year olds	41%	
45-64 year olds	49%	
65-90 year olds	42%	
<b>Dental Visits by Education</b>		
Less than high school	38%	As the prevalence of common dental pathologies is inversely related to educational attainment, these findings confirm that people with the least disease obtain the most dental care and those with the most disease obtain the least care.
HS graduate	40%	
Some college	47%	
4 years of college	59%	
More than 4 years of college	65%	
<b>Dental Visits by Race/Ethnicity</b>		
White (“Other race/not Hispanic)	50%	These racial and ethnicity related disparities persist after adjusting for income.
Asian	38%	
Black	28%	
Latino/Hispanic	26%	
<b>Dental Visits by Income</b>		
Poor	26%	As with education, social disadvantage (those with lowest income) relates to highest oral disease rates while social advantage (those with highest income) relates to lowest oral disease rates. Much of the high utilization among high-income individuals may be attributed to elective care yet total utilization even among high-income subpopulations is modest compared to the professional recommendation of at least one annual dental visit.
Near poor	27%	
Low income	30%	
Middle income	41%	
High income	58%	

missing work or school because of a toothache or dental problem while only eight percent of those with dental coverage lose such productivity.

These unfavorable findings pale in comparison with the poor oral health, unmet oral health needs, and lack of access to dental care for people who are particularly vulnerable because of special healthcare needs or extreme social disadvantage. While data are more scarce on these populations, a few typical findings represent the plight of those with health and social disabilities.

- **Chronically ill and disabled children**, including those 2.6 million between ages 5 and 15<sup>11</sup> with physical, developmental, emotional, and mental disabilities, represent a major challenge to the dental profession. Unmet need for dental care as reported by parents on the National Health Interview Survey is far higher for these children than for their peers. While 7.3% of all parents report that their child is in need of dental treatment that has not been obtained, 24% of parents of children with special healthcare needs report such unmet need.<sup>12</sup>
- **Low-income adults**, particularly those who are Black men, frequently lack insurance coverage through Medicaid and are thereby economically disenfranchised from care. African American men have higher caries, untreated caries, periodontal disease, and oral cancer than white men, even after adjusting for income.<sup>13</sup> Lack of routine dental care leads to extreme oral and systemic pathology that could be avoided through routine preventive and restorative dental care. In Maryland alone, an average of 21 adults were annually admitted to the hospital through the emergency department (ED) from 1991-1995 for management of odontogenic pathology.<sup>14</sup> Nearly 1100 additional patients were reportedly seen in the ED for dental pathology during this period.
- **Adults with disabilities**, who also tend to be poor, have low educational attainment, and tend to be unemployed or marginally employed suffer greater oral disease burden because of factors that include “deprived socioeconomic status, limited mobility, insufficient numbers of qualified dental providers, absence of appreciation for the importance of oral health, lack of motivation and inadequate training of general caregivers in oral health issues, and lack of aggressive oral disease prevention protocols.” The numbers of these adults have increased as a result of higher initial survival rates, improved medical management resulting in increased life expectancies, and the increased likelihood of acquiring a chronic disability later in life so that today an estimated 10% of Americans has a severe disability. Deinstitutionalization has correlated with worsened oral health status as many of these individuals have lost their institution-based dental providers while finding care in the community difficult to access and because “normalization in living arrangements and greater independence may lead to...less rigorous daily oral care and less supervision of diet.”<sup>15</sup> Deinstitutionalization has also increased the demand for community-based dentists to provide essential care, including identification of abuse and neglect which is reportedly “at least four times” greater than for the general public.<sup>16</sup> Advocates for adult “aged, blind, and disabled” report that “low-income people with disabilities or who are elderly have more dental disease, more missing teeth and more difficulty obtaining dental care than other members of the general population.”<sup>17</sup>
- **Elders**, the fastest-growing subpopulation in the U.S., demonstrate exacerbated levels of the social, racial, and ethnic disparities that are reported for younger people. “That fewer white seniors report having poor oral health status or are found to have cavities or have advanced periodontal disease than non-whites reflects disparities in oral health and dental care that are noted back to childhood and adolescence.”<sup>18</sup> Similar disparities are noted by income (poor elders are three times more likely to be edentulous than non-poor elders), age (periodontal disease and root-surface caries are age related), and gender (as with younger populations, caries and periodontal disease rates are higher for males).
- **Frail and institutionalized elders** comprise more than 10% of elders who may be living in the community or may be more severely compromised and living in nursing homes. More than a quarter of people over 80 years of age report difficulties with activities of daily living. In addition to the cumulative effect of oral disease acquired over a lifetime, seniors often experience xerostomia, medication-related and disease-related oral problems, and physical and emotional disabilities that further limit their capacity to obtain and maintain oral health. When they do obtain care, they often require therapy that involves both medical and dental care coordination.<sup>19</sup> Age-related disabilities portend dramatic increases in dental needs as the “population age 65 and older is expected to increase by 20% in the next decades.”<sup>20</sup>
- **Homeless, migrant, and immigrant populations’** difficulties accessing dental treatment are

compounded by individual socio-cultural constraints including linguistic, cultural, and logistic issues in addition to the typical issues related to low-income including financing, valuation and salience, and lack of available providers. Homeless individuals often suffer additionally from psychiatric and substance-abuse comorbidities.

In contrast, some special needs populations appear to be faring at least as well, if not better, than the population at large. Self-reports by people living with HIV/AIDS (PLWHA) who were receiving medical care in 1996-1997 indicate favorable oral health status and high levels of dental utilization. While methodologic and demographic differences may partially explain these findings, self-reported rates of caries and periodontal disease were lower than for the population at large and 19% more PLWHA report having a dental visit in the last year than the general population. Notably, only 26% disagreed that “people with HIV who want a dental appointment can obtain one when they want it,” perhaps because 18% reported not disclosing their HIV status to their dentists.<sup>21</sup>

Availability of dental care also appears to be less of a problem for persons whose diseases or disabilities do not involve motor and cognitive dysfunctions and whose socioeconomic status is higher. For example, people with asthma, diabetes, chronic cardiac or pulmonary diseases, arthritis, and other prevalent chronic diseases are not represented in the literature as people who have difficulty accessing dental care. Pregnant women, however, represent an interesting subset of typically healthy individuals as their use of dental services appears to be lower than for the general population of women. A four-State review of the Pregnancy Risk Assessment Monitoring System concluded that “most mothers did not go for dental care during their pregnancy; among those who reported having [dental] problems, one-half did not get dental care.”<sup>22</sup> The finding that pregnant women do not utilize dental care at levels equivalent to other women may suggest either that pregnant women delay care or that dentists are inappropriately hesitant to care for these women.

### **How vulnerability relates to dental care**

Modeling these findings suggests that two dimensions relate to both poor oral health and limited access to dental care for vulnerable populations: (1) where an individual falls on a gradient of social advantage/disadvantage, and (2) where that individual falls on a gradient of health advantage/disadvantage. These combine to

yield for each individual a resultant “treatment difficulty” level that is associated with lack of access to dental care. Relevant to the Title VII program, this lack of access is a direct reflection of dentists’ competency and confidence in treating vulnerable individuals as well as their experience and comfort coordinating dental care with these individuals’ physicians.

The social gradient is represented by a spectrum ranging from those who are socially empowered to those who are socially disadvantaged. Factors that tend to move a person down this spectrum toward disadvantage include an individual’s physical attributes like young age, old age, and being a minority as well as social conditions including low income, low education, lack of insurance, and immigrant, migrant, or homeless status. Similarly, the health gradient also relates to availability of dental care or at least to the difficulty of both obtaining and providing dental care. At one end of the spectrum are those individuals whose health status has little impact on dental access and care, e.g. those who are completely well or who experience a well controlled chronic illness that does not impact movement or cognition. Individuals with mobility issues (e.g. those in wheelchairs), sensory disabilities including blindness and deafness, frailness, and diseases such as AIDS or other diseases perceived to be threatening are further down this spectrum. Those with movement disorders (which make delicate dental manipulations particularly challenging) and cognitive dysfunctions are even further down this spectrum and, as a result, face greater disease and lesser access than others. People affected by neurodevelopmental disorders and intellectual disabilities (ND/ID) including mental retardation, severe autism, psychoses, and degenerative neurological conditions are among the most “orally disadvantaged” by health.

Averaging an individual’s locus on the social spectrum with that individual’s locus on the health spectrum determines how disadvantaged the individual is in relation to obtaining routine dental care and being at risk for poor oral health and unmet treatment needs. For example, a perfectly healthy individual who is very young, very old, Black or Latino, or poor will have less access to dental providers than a healthy person without social vulnerability. Similarly, a white, adult, affluent, insured woman who suffers from psychoses, utilizes a wheelchair, has HIV, or is pregnant will have less access to dental providers than a socially empowered individual without a health concern. In general, the degree of access limitation (which may reflect dentists’ unwillingness to accommodate socially and medically vulnerable individuals) is a bivariate function of social and health liabilities.

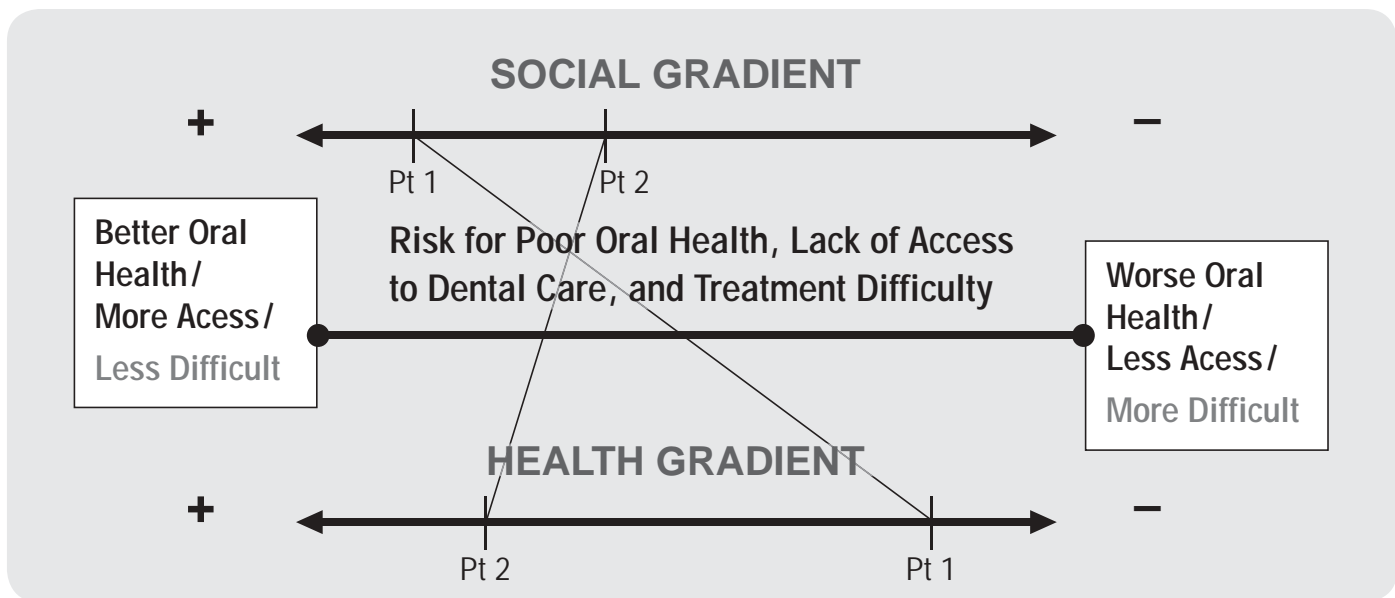


Diagram 1 illustrates the interaction between social and health gradients in determining risk for poor oral health and disadvantage in obtaining dental care. Patient 1 (Pt 1) has a more favorable social status than Patient 2, while Patient 2 has a more favorable health status than Patient 1. Averaging their loci on each gradient yields a locus on the “treatment difficult and risk for poor oral health” dimension, indicating that Patient 1 is more vulnerable than Patient 2.

## II. DENTISTS’ CAPACITIES AND COMMITMENTS TO VULNERABLE AND SPECIAL-NEEDS POPULATIONS

Information from pre-doctoral dental trainees’, post-doctoral trainees’, and practitioners’ self-reports of competency and commitment to vulnerable and special-needs populations reveal core reasons why these populations remain underserved.

### Dental students’ preparation for treating vulnerable populations

Title VII programs in dentistry target post-doctoral training and therefore depend on students’ knowledge, skills, and attitudes when graduating from dental school.

The graduating class of 2003 was asked to rank their “preparedness for practice” on a five-point Likert scale from “not well enough prepared” to “well prepared.”<sup>23</sup> Of the 83% who responded to the survey, more than

one-in-three (34.7%) reported that they were unprepared (“not well prepared” or “less than prepared”) to care for the disabled. About one-in-five reported that they were unprepared to treat people with HIV/AIDS (21.5%), adapt treatment to low-income patients (21.1%), care for rural populations (19.6%), or care for a “diverse society” (18.1%). About one-in-seven reported that they were unprepared to integrate medical and dental care for their [chronically ill] patients (15.6%), or care for geriatric (13.7%) or pediatric (13.1%) patients. These findings suggest that graduating dentists’ self-reported limitations may significantly hamper their future willingness to care for many of the most vulnerable people in society, particularly since fewer than half of dental graduates pursue additional clinical training. With the overall dentist-to-population ratio shrinking and the numbers of special-needs patients increasing, future care of special-needs patients is markedly threatened by graduating students one-third of whom feel unprepared to treat “the disabled.”

Our analysis of multiple-year American Dental Education Association graduating-student surveys suggests that dental school graduates of 2003 consider themselves somewhat better prepared than the classes of 2002 and 2001 in caring for people with disabilities and children but less prepared to treat elders or to “treat a diverse society.” This may reflect better preparation or may simply reflect greater awareness among more recent graduates that U.S. demographics is making it more important to consider elders and minorities.

Evidence suggests that graduates’ perceptions of competency to treat vulnerable people—including people with mental retardation,<sup>24</sup> very young children,<sup>25</sup>



children,<sup>26</sup> disabled adults,<sup>27</sup> elders,<sup>28</sup> and frail elders<sup>29</sup>—relates directly to their lack of dental school experiences with these groups. Clearly, current dental school experiences are not sufficient to ensure a sense of competence in treating many vulnerable individuals. Finding that dentists provide care to a disproportionately small percentage of young children,<sup>30</sup> some observers have suggested that “dentists may be more afraid of young children than young children are of dentists!” This observation likely extends to other vulnerable groups.

### Factors that may influence future care of vulnerable and special-needs populations

In addition to professed competencies, students’ social and demographic characteristics may relate significantly to their career service to vulnerable and special-needs populations.

- **Gender**

Since the mid-1970’s the numbers of women dental graduates have increased dramatically (from 1% in 1973 to 30.8% in 1990 and 41% in 2003), but the effect of this shift on access to care is yet unknown. Early evidence suggests that this shift may benefit care of the underserved. Among four motives identified for dental school enrollment—“people orientation/ caring,” “business,” “financial,” and “flexibility”—female dental students ranked higher than male dental students on “people orientation” and “caring” and lower on “business motives.”<sup>31</sup> Practice patterns of women dentists are different from those of their male colleagues independently of training differences in types of practice, patients seen, and services provided.<sup>32</sup> Female students may also be less judgmental of patients and their lifestyles as suggested in a finding that female

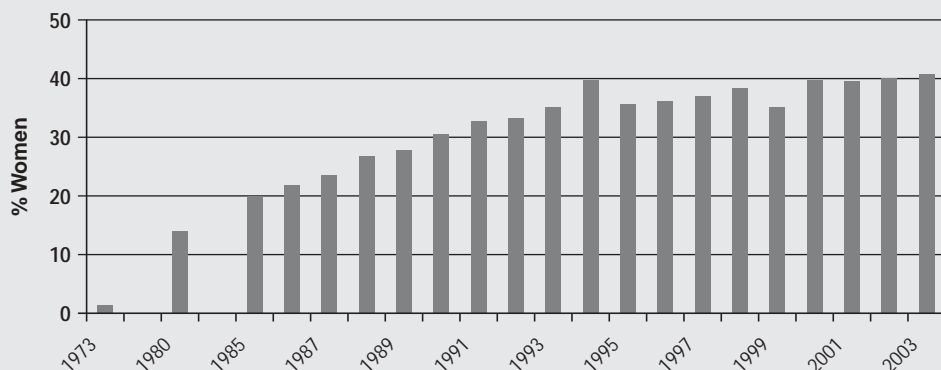
students hold significantly fewer negative attitudes toward patients at risk for or with HIV/AIDS than do male students.<sup>33</sup>

- **Race**

Evidence strongly suggests a relationship between dentists’ race/ethnicity and population served. Practicing dentists who are minorities see higher percentages of minorities in general and underserved minorities (Blacks, Hispanics, and Native Americans) in particular than do white dentists (Chart 1: Rows 1, 2). All groups of dentists express this social affinity as they treat more people of their own race or ethnicity than the percentage that these groups constitute in society (Chart 1: Row 3). Among new graduates, white, Black, and Hispanic students expect to treat fewer underserved minority patients than do current practitioners (Chart 1: Row 4). Native American and Asian dental students anticipate seeing marginally more underserved patients than do their practicing counterparts. Despite their anticipation of seeing fewer minorities than practicing dentists, Black and Hispanic graduates are more than twice as likely as white students to explain their choice of a dental career as motivated by a “high interest” in “providing service to vulnerable and low-income populations” (Blacks 28.2%, Hispanics 24.4%, and Whites 12.2%) and in “service to own race/ethnic group” (Blacks 34.1%, Hispanics 27.5%, and Whites 7.3%).

These findings become most meaningful in the context of U.S. demographics as 81% of Americans are white, 12% Black, 13% Hispanic, 4% Asian, and 1% Native American. When comparing dentists’ patients with overall U.S. demography, white dentists see only 80% of the expected number of underserved minorities, while Black dentists see 2.9 times the expected number, Hispanic dentists 2.2 times the expected number, Asian dentists 1.1 times the expected number, and Native Americans 1.2 times the expected number. When comparing dental students’ anticipated patients (Chart 1: Row 4) with overall U.S. demography, white dental students anticipate serving only 50% of the expected number of underserved minorities, while Black students anticipate serving 2.3 times the expected number, Hispanic students 1.5

Women Dental Graduates by Year



**Chart 1**

	<i>White Dentists or Students</i>	<i>Black Dentists or Students</i>	<i>Hispanic Dentists or Students</i>	<i>Native American Dentists or Students</i>	<i>Asian Dentists or Students</i>
1. Dentists' patients who are minorities <sup>34</sup>	23%	73%	56%	37%	53%
2. Dentists' patients who are underserved minorities <sup>35</sup>	20%	72%	53%	29%	27%
3. Dentists' patients who are same race as selves <sup>36</sup>	77%	62%	45%	10%	25%
4. Students' expected patients who are underserved minorities <sup>37</sup>	13%	57%	38%	28%	29%

times expected number, Asian students 1.2 times the expected number, and Native American students 1.1 times the expected number. These findings support ongoing efforts by Title VII to promote the recruitment and training of minority candidates underrepresented in dentistry.

Students' anticipation of serving minorities less equitably than do current practicing dentists may reflect less intent to care for minorities or may simply reflect less race consciousness or a lack of information about the demographic makeup of the U.S. Only 10.9% of dental graduates are underserved minorities—a figure that trended higher in the 1980's and 90's and subsequently dropped. While U.S. Blacks constitute 12.3% of the population, they compose only 4.4% of graduates. Similarly, Hispanics constitute 12.5% of the population but only 6.0% of dental graduates, and Native Americans constitute 0.9% of the population but 0.5% of dental graduates. Conversely, Asian graduates are overrepresented, comprising 24.6% of graduates but only 3.6% of the U.S. population.

These findings have led to efforts by the Robert Wood Johnson Foundation and the W. K. Kellogg Foundation to promote recruitment of underrepresented minorities and by advocates to change licensure laws. For example, the disparity between supply and

demand for Latino dentists has led California to experiment with licensure of Mexican-trained dentists and other States to facilitate licensure for foreign-trained dentists who complete U.S.-accredited dental residencies.

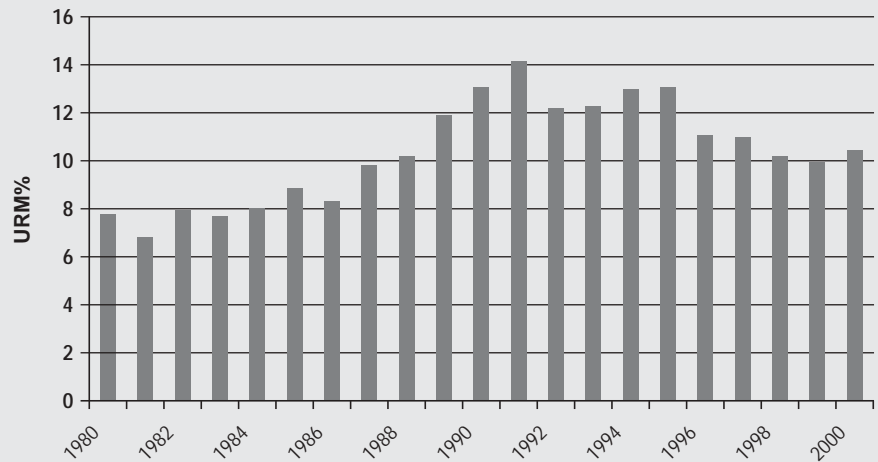
• **Marital Status**

Since 1998, the percentage of dental graduates who are married has increased modestly to 43%. No studies have related marital status to access.

• **Debt**

The American Dental Education Association has reported extensively on student debt<sup>38</sup> on the assumption that debt levels impact career decisions including election to continue training beyond dental school and practice decisions such as participation in

**Percent Dental Graduates Who Are Black or Hispanic by Year**



Medicaid. While this association is logical and is often assumed to be true, it has not been rigorously tested. In 2003, only 10% had no debt at graduation, and over a third had debt in excess of \$150,000.

- **Social class**

Parental income has been tracked as an indirect measure of students' social status and their affinity for various U.S. subpopulations. While the median household income in the U.S.<sup>39</sup> has ranged from approximately \$39,000 to \$44,000 from 1998 to 2003, only 30% of dental students report parental income of less than \$50,000. An additional 25% of dental students report parental income in excess of \$150,000—a level representative of less than 5% of the U.S. population.

- **Timing of career choice**

The influence, if any, of career choice timing on students' expressed competencies or practice plans is yet unexplored. Thirty percent of recent graduates decided on dentistry before their college years, 50% during college, and 20% after college graduation. These different groups may be amenable to different strategies designed to attract dentists to care of the underserved.

- **Post-graduate service**

Approximately 10% of graduates enter public service either through the military, national health service corps, and/or employment in government-sponsored safety net clinics. Little is known about how these experiences may impact career decisions. There were only 404 dentists who participated in the National Health Service Corps (NHSC) during a seventeen-year period ending in 1997. Among the 62% of them who responded to a survey, fewer than half (47%) reported that they continued to care for underserved populations after completing their obligation. Factors associated with those who continued caring for the underserved were being African American, having a "higher altruistic motivation," and having a "higher final salary during NHSC assignment."<sup>40</sup>

## Training in Special Care Dentistry

Pre-doctoral clinical training in care for people with special needs is required under the American Dental Association Accreditation Standards for Dental Education Programs Standard 2-26, which states that "Graduates must be competent in assessing the treatment needs of patients with special needs."<sup>41</sup> The Commission's intent

statement includes a definition of special patients as those "whose medical, physical, psychological, or social situations may make it necessary to modify normal dental routines in order to provide dental treatment..." Notably, graduates are not expected to be able to treat, but only to assess, such individuals. Experts have observed that this standard is unlikely to prepare dental students sufficiently to treat special-needs patients in their practices and have applauded an American Dental Education Association's resolution calling on the Commission to strengthen this standard with a required clinical treatment experience.<sup>42</sup>

A review by the American Academy of Developmental Medicine and Dentistry (AADMD) reports that only 7 of 56 dental schools "have substantial programs in special-needs dentistry."<sup>43</sup> AADMD also reports that pre-doctoral instruction regarding patients with ND/ID is particularly thin with average class hours declining from 13 in 1993 to 5 in 1999 and the majority of dental schools (65%) reporting less than 10 hours devoted to care for people with special needs. Reflecting a resolution by the American Dental Association's governance in 2002 supporting access to oral health care for persons with special needs, AADMD has proposed a "nationally consistent, quality curriculum that can be adapted to any medical or dental school and tailored to undergraduate or postgraduate level needs."

Incorporating instruction and experience with special-needs patients is controversial,<sup>44</sup> yet practitioners who receive such pre-doctoral education with children were found to be "significantly more likely to report that they "often" or "very often" treated special needs children."<sup>45</sup> Evidence of the resistance of dental educators to incorporate significant instruction in special care for pre-doctoral students is the rapid erosion of such training efforts which followed termination of foundation funding in the 1970's.<sup>46</sup>

In sum, the pre-doctoral dental education and training experience provides an inadequate base for Title VII-supported post-doctoral training in the care of vulnerable and special-needs populations. It is unlikely that Title VII programs can compensate for this inadequate foundation, particularly since Title VII reaches so few dental trainees and does not, itself, place priority on caring for these populations. Clearly, the Title VII program would benefit markedly when addressing the needs of America's most vulnerable citizens by extending its programs to pre-doctoral as well as post-doctoral dental education as it does with medical education. Needed are curriculum development and faculty development programs as well as education and training experiences

for students who are on their way to gaining the public's trust as dental practitioners able to treat the entire public's needs.

### **Post-doctoral dental training in special care dentistry**

Less than 40% of graduating dental students in any one year continue their formal training in programs that improve their competencies in either general dentistry or one of the dental specialties, including those programs supported by Title VII. Only 42% of these advanced trainees pursue the two primary care fields of general and pediatric dentistry (36% and 6%, respectively). Thus, only one-in-six dental graduates goes on to study advanced primary care dentistry in which they may (or may not) enhance their skills with vulnerable and special-needs patients.

Accreditation standards for post-doctoral general dentistry programs only tangentially reference special-needs populations by stating that "Students/Residents completing the program must receive training and experience in providing comprehensive multidisciplinary oral health care at a level of skill and complexity beyond that accomplished in pre-doctoral training for a variety of patients, including patients with special needs."<sup>47</sup> Less expansive than the analogous pre-doctoral standard, the supporting documentation does not reference special-needs patients or describe appropriate examples of evidence to demonstrate compliance with the special-needs aspect of this requirement. Perhaps because few Advanced Education in General Dentistry Program (AEGD) programs provide substantial experience with vulnerable and special-needs populations, particularly children, AEGD has been found to have "no effect on willingness [of practicing dentists] to care for children with special healthcare needs."<sup>48</sup>

In contrast to general dentistry programs, post-doctoral pediatric dentistry education has played a primary role in caring for special-needs patients of all ages and care for special-needs children is generally regarded to be more available than for these same individuals in their adulthood.<sup>49</sup> Assumption of responsibility for people with special needs by pediatric dentists has resulted in controversy over the appropriate age range of patients to be cared for by pediatric dentists, particularly given these dentists' limited expertise in providing adult services. While 48% of pediatric dental residencies provide adult special-needs care, 55% of program directors claimed that "it should not be the role of pediatric dentists to provide treatment to this population."<sup>50</sup> Even

if pediatric dentists were readily available to care for people with special needs of all ages, they constitute less than 3% of practicing dentists.

Title VII is uniquely positioned to assertively redirect the contribution of AEGD training to the needs of America's most socially and medically underserved people by establishing requirements, priorities, and preferences that go well beyond current ADA accreditation standards.

### **Dental practitioners' contribution to care of vulnerable and special needs populations**

The American Dental Association's extensive private practitioner survey system does not track dentists' care of vulnerable and disabled individuals.<sup>51</sup> Yet claims by these individuals that they cannot identify willing providers suggests that practitioners' willingness is significantly constrained. Examples abound. A quarter of parents of special needs children report that their children's known treatment needs remain untreated. Nearly one-in-five people living with HIV/AIDS chose not to identify themselves as HIV+ to their dentists for fear of losing access to care. The Bureau of Health Professions' compendium on Dental Care Considerations of Disadvantaged and Special Care Populations details lack of access for very young, very old, and special-needs adults, particularly those who are minority and/or low-income.

Practicing dentists who do care for children with special healthcare needs were characterized as those who are older, who accept Medicaid, and who practice in small towns. These factors suggest that these dentists are more engaged in their communities, more likely to be personally familiar with families of vulnerable and special-needs patients, and practice in ways that are more socially equitable. Such dentists, and those who experienced training in special care dentistry during dental school are also more likely to desire additional continuing education in care of children with special needs.<sup>52</sup> These findings suggested that Title VII training that is designed to bring trainees into closer contact with their communities (e.g. through true service learning) and that provides experiences with special care will more likely graduate dentists who care for special-needs populations.

Continuing professional dental education rarely provides additional training on vulnerable and special-needs populations. Noting this paucity of training opportunity, proponents have suggested that States mandate short courses in special care dentistry as a condition of

licensure as some do for infection control, radiation hygiene, and identification of child abuse. A few dental schools and hospitals have developed unique fellowship programs in care for special-needs populations that could serve as models for both Title VII funding and continuing education for practitioners.<sup>53</sup>

### **Modeling Dentists’ Willingness to Treat Vulnerable and Special-Needs Populations**

Understanding the determinants of dentists’ willingness to treat vulnerable and special-needs populations has strong relevance to Title VII as this understanding provides a basis for improving the program. Some research efforts have succeeded in modeling and characterizing the determinants of dentists’ unwillingness to treat vulnerable and special-needs populations, particularly PLWHA.<sup>54,55</sup> These models, based on the Theory of Planned Behavior<sup>56</sup> (with support from related theoretical approaches, e.g. theory of reasoned action, health belief model, and social learning theory), employ behavioral determinants to explain provider behavior.

Principle determinants of healthcare practitioners’ “willingness to treat” include

1. attitudinal expectations: the beliefs a provider holds about the positive and negative consequences of adopting the behavior,
2. subjective norms: providers’ perceptions that a behavior meets or fails to meet an expectation about them by people important to them,
3. behavioral control: providers’ self-perceived ability to perform the behavior, and
4. intention to treat: providers’ specific plan for performing the behavior.

As discussed above, substantial numbers of dental students report little “behavioral control” or competency to care for vulnerable and special-needs populations. As a training program, Title VII can directly address this limitation. Additionally, Title VII can readily address the other three determinants of dentists’ and physicians’ willingness to treat by incentivizing programs to develop didactic and experiential interventions that address attitudinal expectations, that confront and redefine subjective norms, and that help trainees develop specific plans to treat vulnerable and special-needs patients in their planned practice settings.

## **III. SYSTEMS PERSPECTIVE**

### **The medical dental interface**

The conception of a distinction, and therefore an interface, between oral health and systemic health is prevalent yet mythic as the mouth is inherently as much an integral and specialized component of the body as any other structure. Comprised of the same connective, circulatory, neural, and lymphatic tissues, yet containing specialized structures of teeth and gingivae, the mouth is part of the gastrointestinal and respiratory systems and is continuous with all somatic systems. It is therefore both influenced by and influential on general health.

Past failures of medical education to extend its teaching to the oral cavity, including the cavity’s specialized structures, reflects the legacy of a historical accident rather than a biomedical rationale. That legacy is a distinction not between oral and systemic health but between the professions of medicine and dentistry which arose in the 1830’s when Horace Hayden and Chapin Harris sought to establish the first dental school in the country but were rebuffed by the Baltimore College of Medicine because of dentistry’s origin in the barber trade. As a result, dentistry—which is analogous to other surgical subspecialties of medicine—developed its own independent educational systems, professional culture, institutions and organizations, payment mechanisms, legal and regulatory systems and other attributes of a healing-arts profession.

The artifice of this professional distinction in terms of underlying health was highlighted in the “major findings” of the Surgeon General’s Report on oral health which include:

- “Oral diseases and disorders in and of themselves affect [general] health and well-being throughout life.”
- “Lifestyle behaviors that affect general health ... affect oral and craniofacial health as well.”
- “The mouth reflects general health and well-being.” and
- “Oral diseases and conditions are associated with other [general] health problems.”<sup>57</sup>

These findings are increasingly supported by epidemiologic associations between oral and systemic diseases and by putative pathophysiologic pathways that suggest causality. Relationships between oral health and cardiovascular, reproductive, and metabolic health are currently being newly explored from the direction

of oral health impacting general health while dentists have long understood that poor general health impacts negatively on oral health.

As the mouth becomes increasingly “reintegrated” into the rest of the body through these research efforts, reintegration of medical and dental care systems has not occurred, even in such fundamental arenas as insurance coverage. To the contrary, professional distinction and autonomy, trends in insurance products and coverage in both public and private sectors, and approaches to professional education and training reinforce the separation of the professions. As a major driver of health professional education in the U.S., the Title VII program is uniquely positioned to exert pressure for change in this inappropriate, costly, and dysfunctional distinction.

The relationships between medicine and dentistry for pediatric populations exemplifies the problems for all vulnerable and special-needs populations inherent in the legacy of these two care systems, even at the level of health promotion and disease prevention. A Surgeon General’s Workshop noted that “Because medical and dental health promotion activities are independent and often not effectively linked, opportunities for early and timely disease prevention and detection are often missed.”<sup>58</sup> This medical-dental relationship has been studied extensively through a HRSA/MCHB-supported project entitled, “The Interface Between Medicine and Dentistry in Meeting the Oral Health Needs of Young Children,”<sup>59</sup> which found that the “historic separation of medical and dental practice...has had deleterious effects for Americans of all ages, but has especially jeopardized the oral health of the most vulnerable population groups, including young children.” A variety of medical-dental organizations have been created to deal with interface disjunctions for various populations, among them the Association of Clinicians for the Underserved, the American Academy of Developmental Medicine and Dentistry, the Clinical Directors Network, and the American Cleft Palate and Craniofacial Association.

## Educational systems

A number of structural differences between medical and dental education may explain why few dental students, dental residents, and practicing dentists either describe themselves as competent to treat vulnerable and special-needs populations or demonstrate willingness to do so.

One profound difference is expectations of medical and dental pre-doctoral education. While medical education anticipates that students will gain a sound

knowledge base that prepares them to learn to practice, dental education anticipates graduating competent practitioners—people with both the knowledge and the clinical skills to immediately provide services to the population at large. Physicians who wish to become clinicians typically engage post-medical school residency training that extends their education and experience and gradually moves them ‘through the ranks’ from raw student to accomplished practitioner. In contrast, less than half of dentists engage in post-dental school training, and the majority are expected on graduation day to be competent practitioners. Indeed, competition for post-doctoral positions like those supported by Title VII may exacerbate this problem by favoring the more accomplished dental students, leaving the less accomplished students with fewer opportunities to refine their skills under supervision.

A second fundamental difference between medical and dental training which exists at both the pre- and post-doctoral levels is the way that dental and medical trainees engage people as patients. Because medical students and trainees provide both medical and surgical services to their patients, they routinely observe and experience patients from both the pharmacotherapeutic/socio-behavioral perspectives of medical care and from the interventional/“object” perspective of surgical care. Because dentistry is in essence a *surgical* subspecialty, dental students, in contrast to medical students, tend to focus exclusively on surgical treatments to the point that the patient’s oral structures, rather than the patient, become the center of their attention.

A third structural difference between medical and dental education is also experiential. Medical students, as the lowest-level care providers in a formal hierarchy of doctors, spend a great deal of time observing doctor-patient interactions and engaging patients as people. These multiple, informal or structured, extensive person-to-person interactions (e.g. during patient interviewing, while awaiting attendings or test results, or while assigned to a service during a period of slow activity) provide unique opportunities for medical trainees to observe, consider, discuss, and reflect on the lives of their patients. Taking social as well as medical histories, dealing with family members stressed by a loved-one’s illness, involving themselves in arranging for post-hospitalization care, and dealing with attendant issues ranging as widely as compliance with homecare recommendations to insurance coverage all raise medical trainees’ awareness and involvement in their patients’ physical, social, and familial environments. In contrast, dental trainees have little reason or opportunity to engage people at

these personal levels. As such, issues of social vulnerability and special needs are subsumed into the one relevant clinical/surgical question: Does my patient's status or medical condition require any adjustment to my surgical approach? Thus, conditions as disparate as pregnancy, HIV/AIDS, cerebral palsy, mental retardation, physical disability, and cardiac pathology are all reduced by dental providers to a question of 'how to get the job done.'

A fourth difference is in the range of patients who are seen by medical and dental students and trainees. While medical trainees see patients from the full breadth of the social spectrum, including the socially disenfranchised (e.g. homeless, migrants, immigrants, and dysfunctional substance abusers), those in dentistry see primarily patients who are self-selected or screened for appropriateness as trainees' patients. Similarly, medical trainees are more likely than dental students to encounter patients in health centers, walk-in clinics, emergency rooms, and special care clinics. This limits dental students' exposure both to vulnerable people who use these clinics and to the professionals who attend to them.

Collectively, characteristics of dental education provide far fewer experiential opportunities and contexts for dental than medical students to observe and engage their patients from a social, behavioral, or environmental perspective. The Theory of Planned Behavior suggests that these structural differences likely lead dentists to have more negative "attitudinal expectations," lower "subjective norms," less "behavioral control," and less "intention to treat." In short, because health professional learning is largely experiential, dental students at both the pre- and post-doctoral levels have few opportunities to learn how to consider vulnerable and special-needs individuals. This may help explain why the dental safety-net remains small and understaffed as evidenced by the extreme vacancy rates for dentists in such programs as community health centers<sup>60</sup> and the Indian Health Service.<sup>61</sup>

This paucity of training experiences for dentists is being addressed by major foundations and by a small number of notable programs. The privately funded "Pipeline" project seeks to increase the numbers of underrepresented minorities in dental school ("URMs") while also moving dental training into the community in the expectation that treating patients in community-based sites will increase the likelihood of students engaging underserved populations more effectively.<sup>62</sup> An emphasis on vulnerable populations is central to the philosophy of the Arizona School of Dentistry and Oral Health which states its mission as educating

dentists whose careers will focus on "serving those in need" and lists as goals cultural competency, community responsiveness, and participation in interdisciplinary healthcare systems. While many, if not most, dental schools cite similar objectives, Arizona is the first school to organize entirely around these principles. Nonetheless, the nation's dental schools are a key element of the small dental safety-net as they contribute significantly to the oral healthcare needs of select vulnerable and special-needs individuals. Dental residencies, including those supported by Title VII, are also a key element of the safety net, but few focus specifically on caring for vulnerable and special-needs individuals. The residency in rehabilitation dentistry at the University of Washington,<sup>63</sup> second-year GPR in special care dentistry at the University of Medicine and Dentistry of New Jersey,<sup>64</sup> and training at school-based regional dental programs like those at Tufts University School of Dental Medicine and the University of Tennessee provide examples of effective training and service programs.

The experience of Columbia University may be representative of problems encountered when AEGD programs focus exclusively on high-needs populations. Columbia instituted a second AEGD program in 1997 to train dentists in community-based sites that care for socially and medically compromised patients, particularly those with HIV/AIDS and complex psychosocial and medical comorbidities. Despite successful development of community-based educational partnerships, a rich curriculum in cultural competency and interdisciplinary care, and interdisciplinary experiences for the fellows, the program was not sustainable financially and did not attract a sufficient pool of trainees committed to serving the target population. After four years, this AEGD program was merged with the dental school-based AEGD program and has succeeded somewhat in expanding the exposure of all fellows to special-needs patients. Its legacy continues through a HRSA/HAB-supported community-based partnership with an HIV/AIDS center through which select AEGD residents rotate.<sup>65</sup>

Dental training for medical providers is limited at each stage of medical education,<sup>66,67</sup> yet a number of programs have been developed in recent years by government (e.g. the BHP "Primary Care and Oral Health" program and the CMS demonstration project on early interventions for children), professional associations (AAP, AAFP), State-level foundations (e.g. CT Health Foundation, CA Health Foundation), and dental schools to enhance oral health education of primary care medical providers, particularly those who treat young children. Interest in expanding the role of medical providers

in oral health screening, risk assessment, counseling, and caries prevention was evidenced by 13 of 15 States attending a workshop on dental needs of underserved children in Medicaid who identified this approach as a primary component of strategic planning.<sup>68</sup>

### **Interdisciplinary care systems**

Increasing attention to the bidirectional interplay between oral and systemic health has stimulated greater dialogue between the medical and dental professions. Nonetheless, dental concerns most typically arise for medical providers when a patient's course of care (e.g. preparation for chemotherapy, dialysis, organ transplantation, or need for general anesthesia in the presence of loose incisors) requires immediate dental rehabilitation rather than as a core element of coordinated primary care. Dental considerations are also highlighted in team-care environments as exist around craniofacial teams and less frequently HIV/AIDS teams, trauma teams, and transplant teams but are not typically integrated with primary care. Incorporation of dental considerations into routine primary medical care is more challenging given the range of issues and constraints confronting primary care providers when assessing and counseling patients' full range of health needs.

The failure to incorporate primary oral care with primary general health care has been addressed by the U.S. Surgeon General. "Action 1" of the Surgeon General's 2003 *National Call to Action to Promote Oral Health* is to "change perceptions of oral health." Specific recommended steps that relate to interdisciplinary care include:

1. updating health professionals' educational curricula and continuing education to include oral health content and associations between general and oral health;
2. training medical providers to conduct oral screenings and make appropriate referrals to dentists;
3. promoting interdisciplinary training of medical, dental, and allied health professionals regarding risk reduction for oral and systemic conditions; and
4. encouraging increased cross-professional referral when treatment impacts each other's disciplines.<sup>69</sup>

The U.S. Surgeon General's 2000 Workshop on Children and Oral Health addressed interdisciplinary care and suggested "identifying high risk children early and promoting individualized preventive regimens in

both medical and dental practice; developing common core curricula for all health professionals on oral health that is comprehensive and integrative; and developing accreditation standards, guidelines, and performance measures that assure the inclusion of oral health promotion and treatment in professional training and practice."<sup>70</sup>

A national survey of family medicine residency directors regarding inclusion of pediatric oral health indicated wide agreement (95%) that oral health should be a component of residency training but noted the lack of faculty knowledge to support this goal.<sup>71</sup> Similarly, the American Academy of Pediatrics endorses oral health education for pediatricians, but a review of pre-doctoral, residency, and continuing education programs revealed levels of education on oral health "that are inadequate to provide pediatricians with the competencies required for the provision of quality oral health care to children."<sup>72</sup> Others call for interdisciplinary care to address the particular oral health needs of the elderly,<sup>73</sup> pregnant women,<sup>74</sup> as well as young children, elders, and adults with special needs.<sup>75</sup> HRSA has stimulated the development of interdisciplinary training materials, many of which are posted at the National Oral Health Resources Center website.

Referrals between provider types, however, remain problematic from the perspectives of physicians, dentists, and care systems. For example, with only two hours of training, pediatricians were able to accurately identify cavitated carious lesions (cavities) but not more subtle dental findings,<sup>76</sup> and few pediatricians (33%) and family practitioners (19%) report screening for early signs of tooth decay in children.<sup>77</sup> Further study demonstrated that "traditional didactic instruction does not fulfill...requirements" of preparing pediatricians to effectively assess and refer young children at high risk for dental caries. Study authors conclude that self-efficacy approaches are needed to effectuate successful engagement of pediatricians.<sup>78</sup> Additionally, the widespread lack of available dental care for young children—both because of the paucity of dental providers relative to medical providers and because of disparities between medical and dental insurance coverage—constrains pediatricians' willingness to instigate referrals. There is no evidence of routine oral screening or referral practice by mainstream primary medical providers to dentists. While dentists have been encouraged to screen their patients for such health-related conditions as hypertension, domestic violence, tobacco usage, and substance abuse, there is also scant evidence in the literature that dentists actively refer patients to primary medical providers.



As dentists increasingly treat patients with complex medical conditions resulting from an aging population and longer life expectancies in the face of chronic illness, they increasingly call upon physicians for “clearance” to proceed with dental care and to determine whether any modifications are needed (e.g. adjusting systemic medications, avoiding dental medications, positional constraints). This trend may increase the frequency of consultations instigated by dentists and may thereby facilitate greater interdisciplinary dialogue.

To increase interdisciplinary care, the American Academy of Developmental Medicine and Dentistry has proposed a “University-based Developmental Medicine and Dentistry Program” (UDMDP) modeled on integrated systems in academic centers.<sup>79</sup>

### **Financing systems**

Just as the medical and dental educational and service delivery systems are separate, so too are systems to finance medical and dental care. Americans are 2.5 times as likely to have medical as dental coverage and dental coverage varies widely in comprehensiveness with few accommodations for special considerations of complex patients. Vulnerable and special-needs populations tend to rely more on public than private coverage which, for adults, is typically inadequate or unavailable as adult Medicaid dental coverage is not Federally mandated. When public insurance is available, far fewer dental than medical providers actively participate or accept payment. Particularly problematic is the loss of dental coverage at age 21 for special-needs children as they age-out of the mandatory EPSDT Medicaid program and become subject to limitations in adult coverage.

While the literature on dental and medical care financing is vast, for purposes of this background paper, it is sufficient to report that the availability and quality of dental coverage is inversely related to socioeconomic status, and therefore to underlying need for dental services. As such, financing of dental care remains a primary constraint on dental care for vulnerable and special-needs populations.

Systemic differences between medical and dental education, systems of care, and financing all have important implications for Title VII training in medicine and dentistry. They suggest that consideration must be given to both pre- and post-doctoral interdisciplinary education, that dental students and trainees would especially benefit from greater engagement with their patients in the contexts of patients’ families and communities, that physicians’ interest in engaging oral health needs

to be appropriately developed and fostered through faculty and curriculum development as well as resident training, and that externalities, especially workforce sufficiency and care financing, will remain a deterrent to improved oral health for vulnerable and special-needs populations.

### **III. RECOMMENDATIONS FOR TITLE VII’S ROLE IN INCREASING THE QUALITY AND QUANTITY OF DENTAL AND INTERDISCIPLINARY CARE TO VULNERABLE AND SPECIAL-NEEDS POPULATIONS**

The health professional literature provides a number of specific suggestions for training dentists to better manage the needs of vulnerable and special-needs populations. The American Academy of Developmental Medicine and Dentistry is promoting a “National Action Strategy” that calls for creating a series of university-based “Developmental Medicine and Dentistry Programs” in medical and dental schools which promote didactic and experiential learning in conjunction with community-based facilities and resources for people with special needs.<sup>80</sup> A 2005 colloquium in the *Journal of the California Dental Association* advocates for a “tiered system of care” that involves case management and triage to the lowest level of provider capable of handling a patient’s oral health needs, a focus on prevention, and integration with other health and social service providers.<sup>81</sup> The series calls for “education in medicine, medications, and complex dental skills” through geriatric and special-needs fellowships and “mini-residencies” that will encourage dentists’ comfort with chronically ill patients who take multiple medications by improving dentists’ abilities to assess complex patients through medical history, physical examination, and use of the medical laboratory.<sup>82</sup> It also calls for “hands on learning” of trainees who are prior-screened for their likelihood of treating people with special needs and suggests a “lifecycle approach” that builds on concepts of anticipatory guidance.<sup>83</sup>

Recommendations of a Surgeon General’s Workshop on Children and Oral Health are also applicable to underserved groups other than children. These incorporate a number of suggestions applicable to the Title VII program including “assure competencies,” “be accountable,” “maximize the utility of science,” “grow an adequate workforce,” and “empower families and enhance their capacities.”<sup>84</sup> The subsequent Surgeon General’s

National Call to Action to Promote Oral Health calls for “increasing oral health workforce diversity, capacity, and flexibility.”<sup>85</sup> Suggested mechanisms include minority recruitment and retention, expanded scholarship and loan repayment, mentoring programs, public-private collaborations, communications and cultural competency training, and more flexible licensure.

The Division of Medicine and Dentistry’s “Dental Care Considerations of Disadvantaged and Special Care Populations” considered oral health needs of young children, adults with disabilities, and frail elders, finding that all three groups are similar “in their dependence on others for transportation to receive dental care, to decide when dental care is needed, and to assure that they receive proper oral hygiene” and that all three require access to dentists with “special training” and “willingness to give them care.” The 2001 conference called for “more and better-trained dental professionals,” “increased integrated medical and dental delivery systems,” “collocation of services,” “mobile services,” “joint training of medical, nursing, and dental care providers,” “greater training at the predoctoral level,” “greater numbers of graduate-level and residency opportunities for advanced training,” and “increased continuing education.”<sup>86</sup> Specific conference recommendations pertinent to training are appended.

Title VII holds strong potential to improve primary oral health services for vulnerable and special-needs populations and individuals by engaging in a series of coordinated approaches that support cultural competency, the idea of the “therapeutic dyad,” interdisciplinary care, and service learning.

## Cultural Competency

The 2001 Advisory Committee Report to Congress stressed the importance of cultural competency training for all primary care providers. It described the concept as “increased awareness and knowledge of the values, customs, illness beliefs, healthcare utilization patterns, and health risk behaviors” of patients from “other cultures.”<sup>87</sup> For purposes of caring for America’s socially vulnerable, medically compromised, and special-needs populations, the concept needs to be refocused internally as the majority of these Americans are not from “other cultures” but are part of the mainstream U.S. culture. What often makes them “different,” and therefore vulnerable or special, is their individually unique set of personal circumstances—circumstances that could generally affect almost any family or individual in America were it not for happenstance or genetics. Thus, in order to consider the special-needs popula-

tion, core concepts of cultural competency must be extended beyond group ethnicity to focus on individuals and their unique capabilities. Title VII can support this approach through curriculum and faculty development that is equally germane to dental and medical trainees as well as through incentives to include this approach in funded programs.

## Therapeutic Dyad

While the very concept of primary care is to de-fragment, coordinate, and manage healthcare, providers alone can offer only half of the relationship needed for success. The Institute of Medicine’s primary care definition stresses the need for “developing a sustained partnership with patients” and “practicing within the contexts of family and community.”<sup>88</sup> The concept of the therapeutic dyad, which emanates from psychiatry, raises the importance of a provider-patient partnership. For example, an investigation of the interplay between a therapist-of-color and a white patient provides a model for cross-cultural encounters<sup>89</sup> not unlike those that the majority of dentists confront when considering whether or not to address the needs of vulnerable and special-needs patients. The concept is particularly germane to vulnerable and special-needs individuals specifically because of their unique constraints and opportunities. For example, medical and dental practitioners cannot know as well as special-needs patients and their families what “works best” for them in managing their health and healthcare needs, including their oral health. Because medical and dental education is experiential, gaining proficiency in this therapeutic dyad will depend upon both student observation and trainee engagement.

## Interdisciplinary Care Training

The more complex the patient or the patient’s presentation, the more primary care will be improved by interdisciplinary approaches. Indeed, were it not for the independent founding of dental education separate from medical education in the mid-19th century,<sup>90</sup> there would be no need for interdisciplinary approaches that tie general medical and oral health services together. However, as interdisciplinary approaches need to extend beyond medicine and dentistry to include linkages with social, nutritional, behavioral, and other services that support health attainment and maintenance, there would still be need to develop working relationships across these disciplines.

At this time, major effort is required to ensure that primary medical providers are as able to screen, assess,

counsel, and refer for oral findings as they are for other findings for which they do not assume primary curative responsibility. Many efforts to train physicians in oral health are currently underway, including those by the Division of Medicine and Dentistry (“Primary Care and Oral Health” grant program that focuses on high-risk young children), Centers for Medicare and Medicaid Services (pilot and demonstration projects in three States), American Academy of Pediatrics (“Peds Care oral health programming”), Association of Clinicians for the Underserved (“pocket cards” on oral health), and many State-level foundations.

Dental providers also need to become more engaged in overall patient health assessment (e.g. by routinely taking and identifying abnormalities in vital signs) and comfortable in making referrals for routine medical care or follow-up on non-oral conditions that may be suspected from a history or oral physical examination.<sup>91</sup>

## Service Learning

An effective pedagogy that collaterally supports cultural competence, the extended therapeutic dyad, and interdisciplinary care is service learning. This approach includes community-based needs assessment, provision of services that address identified needs, and formalized reflection exercises. It is an approach that supports Gagne’s conditions of learning (as reported in the October 2004 Advisory Meeting notes) that include “experience based, problem centered, operative in a supportive environment, and involving active participation with feedback.” Reflection exercises can expand a student’s clinical encounter to promote consideration of a patient’s individuality based on physical, developmental, health, family, social, and community-level characteristics. Existing service-learning efforts in dental education, documented in the literature<sup>92,93</sup> and at the Community Campus Partnerships for Health website,<sup>94</sup> claim success through this methodology. It is an approach that could be further stimulated in both medical and dental education through the Title VII program.

Promoting these four themes in dental education is essential if dentists are to become appropriately prepared and responsive to the needs of vulnerable and special-needs individuals. This can be accomplished through Title VII dental programs by including new incentives and priorities (as has been accomplished with diversity promotion) and by extending programming to faculty development, curriculum development, and training of predoctoral students.

Because the Division of Medicine and Dentistry focuses on primary care education and training and is

itself interdisciplinary, the Division holds strong promise to address the shortcomings detailed in this paper. Attention to vulnerable and special-needs populations and interdisciplinary care can be enhanced through

1. developing a common curriculum for medical and dental students and trainees regarding these populations and their best interdisciplinary management;
2. stimulating service learning including its three formal components of community needs assessment, service that meets the needs of the target population, and structured reflection exercises;
3. making enough AEGD opportunity available to support a mandatory post-doctoral year of dental education;
4. expanding Title VII dental program authorization to include predoctoral dental curriculum development and faculty development;
5. making grants for advanced medical-dental residencies or fellowships in special care dentistry that are modeled on existing fellowships;
6. actively promoting expansion of dental accreditation requirements to include competencies in the hands-on care of these populations;
7. evaluating other training programs (e.g. MCHB’s leadership in pediatric dentistry, Head Start fellowship in pediatric dentistry; HAB’s Community Based Dental Partnership Program, and BHP’s dental public health residencies) for “lessons learned” that can be applied to AEGD programs to foster greater awareness and attention to these populations and their management;
8. making grants available for medical-dental interdisciplinary care for vulnerable and special-needs populations other than young children and for expanded interdisciplinary training to include patient-centered team care with social workers, dietitians/nutritionists, mental health professionals, psychiatrists, and other professionals who deal with vulnerable and special-needs populations.

Additionally, ACTPCMD’s effort to address vulnerable and special-needs populations can build upon earlier recommendations developed by the Division of Medicine and Dentistry’s 2001 Conference on *Dental Care Considerations of Disadvantaged and Special Care Populations* which is appended to the report.

Only by addressing the competency, social normative, and attitudinal constraints that currently limit the

numbers of willing dental providers will disenfranchised individuals with special needs gain routine access to quality primary dental care that is well-informed through interdisciplinary management.

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## APPENDIX F – CARING FOR VULNERABLE POPULATIONS IN TITLE VII PROGRAMS

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Nicole Lurie, M.D., M.S.P.H., Rand Corporation

**T**itle VII programs continue to serve as major venues for training primary care residents and medical students. As such, those programs have important opportunities to assure that doctors entering practice do so with the skills to care for vulnerable populations. Defining the term vulnerable can be problematic, because it means different things to different people. By vulnerable, I mean those at risk of poor health outcomes related to barriers to access to care, sociodemographic and economic factors, or by the nature of their health needs or impairments. Like et al offer a partial listing of population groups many consider to be vulnerable.<sup>1</sup> I would maintain that the skills needed to care for such populations are useful with nearly all patients, but that special competencies are needed when it comes to populations that are likely to fare less well in the mainstream health care system.

In 1990, John Yergan and I proposed a set of competencies needed to care for vulnerable populations in an article in the *Journal of General Internal Medicine*.<sup>2</sup> It is useful to consider what has changed since then and what has not, to assure that the implications of changes in the U.S. population, in residency training, in knowledge that impacts care of vulnerable populations, and in the health care system receive appropriate consideration as they relate to medical education. Indeed, there have been major changes in all four of these domains.

First, the U.S. population is changing dramatically. Demographic trends have been well documented.<sup>3</sup> Among the most relevant for discussion here are the aging of the population, particularly the growth in the over-85 population; changes in the racial/ethnic composition of the country, including the increases in new immigrant groups from around the world, many of whom do not speak English and bring different cultural experiences and beliefs to the health care encounter; the increases in children living in poverty; and the growth in the numbers of uninsured and underinsured. Increasing numbers of frail individuals, many of whom are elderly, live in the community and are not mobile enough to present for care on a regular basis.<sup>4</sup>

Secondly, residency training has continued to undergo significant transition. The shift in the site of

care from inpatient to ambulatory settings, including for many diagnostic and surgical procedures, is well recognized, as are its implications and the opportunities for residency training. Another factor impacting significantly on residency education has been the effect of the 80-hour work week. Without passing judgment on the issues surrounding this change, it is important to note that one implication of this has been the need to adjust resident clinic schedules to remain in compliance with work rules. This often means that their clinics are canceled, or that their clinic schedules are more erratic. As a result, other residents, or a faculty preceptor, may see a resident's patients on days when they are post-call and not in clinic. One consequence, described at least informally in multiple programs, has been degradation in the continuity experience for residents, to the point that some program directors worry that they will no longer be in compliance with Residency Review Committee rules. Some observers have even worried that this phenomenon changes the residents' perceptions of their responsibilities as primary care providers, and that their sense of the need to be available and accessible to their patients has eroded. Furthermore, if continuity between patient and provider is a particularly important ingredient in the quality of care for vulnerable populations, careful attention is needed to assure that residents continue to have an adequate (or better) continuity experience if they are to learn to care for such populations.

The financial pressures on primary care practices and changes in primary care practices structures likely confound this problem. The economic models under which many primary care practices function, including those associated with academic training programs and faculty practices, are tenuous, contributing to the negative perceptions students and residents develop about primary care. Numerous practice plans, in which residents practice and learn, no longer accept Medicaid or uninsured patients, decreasing resident opportunities to care for some of the most vulnerable. And, innovations that are intended to improve patient access and quality, such as open access appointment scheduling, are also challenging to accommodate in the context of residency training and the need for continuity.

In the area of new knowledge, I highlight several developments over the past decade or so that have implications for primary care education. They include increased awareness that racial and ethnic minority groups often receive less care and care that is of poorer quality than non-Hispanic whites, regardless of insurance status<sup>5</sup>; the increased awareness of the importance of cultural competence of doctors and the institutions in which they practice<sup>6</sup>; recognition of low health literacy as a major problem impacting on care and outcomes<sup>7</sup>; the recognition that a relatively small proportion of physicians care for the bulk of minority patients—at least African-Americans, and that these physicians are often in very busy practices and are more likely than others to report difficulty in securing adequate care for their patients in terms of diagnostic tests and specialty care.<sup>8</sup> Geographic information systems have now come of age, and mapping makes it possible to rapidly obtain information about the neighborhood context in which patients live and about some of the resources that are available to them. This has the potential to provide doctors, not just trainees, with increased information about their patients' contextual circumstances.

Continued changes in the health care system also have implications for teaching students and residents about caring for vulnerable populations. Increased emphasis on quality of and satisfaction with care and the move toward pay-for-performance highlights the reality that for many practices and institutions overall quality ratings will not improve unless efforts are made to improve quality for the most vulnerable patient subsets. Some observers note that these pressures may make practices less likely to accept patients from vulnerable population groups. If this were to be the case, opportunities for residents to develop skills to care for these groups would be constrained, as discussed above. Whether disease management will prove a useful tool to improve quality for vulnerable populations remains an open question. Residents graduating from Title VII programs may also be more likely to practice with vulnerable population groups. If Bach's finding holds across other populations, they will often be entering settings that may not have the resources needed to fully care for patients. Just as patients need to learn to navigate the health care system, these doctors need an additional set of navigational tools to be able to help patients get the care they need.

CLAS standards<sup>9</sup> are making an impact on the availability of interpreter services in many institutions, with the implication that residents training in CLAS-compliant settings have increased opportunities to learn to work effectively with such personnel, which is becoming an increasingly essential skill given the chang-

ing demographics of the country. Finally, information technology and the internet will continue to provide additional opportunities and challenges in the care of vulnerable populations. For some groups, including those with mobility or sensory impairments, increased access to information and the ability to communicate electronically with care providers offers the opportunity for greater involvement in their care and greater access to care. Some research suggests that some web-based formats are also effective for low-literacy populations, and that such groups can learn to use the internet.<sup>10</sup> For others, the increased reliance on the internet risks worsening some of the longstanding inequalities in access challenges as web access is an increasing prerequisite for accessing the health care system. Regardless, today's residents will need to learn new skills—and in some sense, will lead the way in developing standards and norms for electronic communication with patients.

While much has changed in the practice of medicine and in medical education, much has remained the same. Many of the attributes of training programs and sites for residency education that we identified in 1990 remain important, and should continue to be attributes of Title VII programs. (The rationale for each was discussed in Lurie and Yergan and will not be repeated here.) They include both institutional attributes and learning goals. A partial list bears repeating. First is a set of institutional attributes that should apply to settings in which residents learn. These include a commitment to provide ambulatory care for indigent and vulnerable groups, adequate staffing of the practice site with non-physician personnel who are appropriate to the needs of the patient population (which are often greater because of greater patient need), recruitment of staff—both physicians and other clinical and clinic staff—from underrepresented minority groups, and preceptors and staff who model socially responsible and culturally appropriate behavior. Similarly, many of the learning goals for residents remain relevant for Title VII programs today. These include: direct experience caring for patients from different vulnerable population groups; development of sensitivity to socio-cultural issues; development of an understanding of one's own responses to patients from different groups and circumstances, including understanding how one's own culture and background may influence those responses; development of superb patient-doctor communication skills, including how to communicate effectively with the help of a translator; understanding how the epidemiology of disease is different for different groups and being able to apply that understanding to one's patient population; learning about prevalent systems to finance care and how that impacts on patient access, patterns of use, and quality



of care; and learning to develop a sense of satisfaction with one's work.

Changes in the environment also suggest that additional new skills are needed. These include the ability to assess the health literacy of one's patients and to use communication skills, such as the teach-back method, that are appropriate for the patient's health literacy level. The increasing numbers of homebound individuals suggests an imperative for learning skills in home care. The continued maturation of the quality movement makes it critical that residents learn to measure and evaluate the quality of care that they provide, including to vulnerable population groups. Residents should have access to a data base of all their patients, and should be able to generate patient registries for use in monitoring quality of care. Baron recently described the utility of personal metrics.<sup>11</sup> If such registries include information about patient attributes that might indicate vulnerability (and residents can populate such data bases with this information), such as race/ethnicity, language, homeless status, etc., they can begin a process of self-assessment about the quality of care they provide to different kinds of patient groups. These data can also be aggregated across the residency program to identify the largest opportunities for both individual and practice site improvement.

Much has been written about the teaching of cultural competency and the content of cultural competency education. While clearly an important issue, Weissman et al<sup>12</sup> and Park et al<sup>13</sup> raise some notes of caution about the best ways to impart those skills. They recently surveyed residents in training programs, and found almost no relationship between the presence of formal cultural competency training and resident self-report of skills in taking care of culturally different patients. However, other attributes of the training environment remained critically important, notably the presence of a mentor or role model.

One issue that has been underdiscussed in the medical education literature is that in general, immigrant groups come to this country healthier than the general population, but that they develop more illness the longer they remain in the U.S.<sup>14</sup> This presents both a challenge and an opportunity in helping them not to adopt some of the unhealthy lifestyle behaviors that may be prevalent around them—smoking, poor diet, and less physical activity. This challenge is the opposite of counseling people to give up unhealthy behaviors, and may require additional skills, particularly in the cultural contexts in which they are needed.

In a related vein, several studies have examined the effectiveness of resident rotations in sites caring for par-

ticular vulnerable populations, such as battered-women's shelters.<sup>15</sup> While they find modest improvements from pre- to post-test on knowledge about the issue at hand, the improvement in attitudes about the patient population does appear to be sustained over time, raising the important question about how such knowledge and attitudes are most successfully taught. The degree to which a similar situation exists with home-based care is not clear. Title VII sites, because they are usually academically based and have both residents on site and vulnerable groups to care for, are uniquely situated to break new ground in this area of medical education research. However, such research is difficult to conduct, in part because it is difficult to get such work funded.

Caring for vulnerable populations can also be emotionally draining. Indeed, emotional challenges come from caring for all sorts of patients, not just those who are vulnerable. Larson and Yao<sup>16</sup> recently described patient care in terms of emotional labor, and suggested that physicians learn some of the skills so successfully taught and used in customer service sectors to increase empathic communication as well as patient satisfaction. This proposal deserves careful attention. A different approach to teaching and learning such skills has the potential to enhance both patient and resident satisfaction.

One of the startling findings to emerge from quality of care research in the last few years is the finding that patients receive about half of recommended care.<sup>17</sup> The problem does not seem to be that we don't know what to do; rather that we do not do it. I believe that the same is true in medical education, including in the care of vulnerable populations. It's not that we don't know what to do, but that we do not consistently apply our knowledge of what constitutes excellent training to actually get it done. Title VII programs play a vital role in residency education and would do well to explore models of accountability for residency education to further enhance the quality of medical education.

## ENDNOTES

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