ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

DELIVERING THE GOOD:

IMPROVING THE PUBLIC'S HEALTH BY ENHANCING THE PRIMARY CARE/PUBLIC HEALTH INTERFACE IN THE UNITED STATES

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

November 2002

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

DELIVERING THE GOOD:

IMPROVING THE PUBLIC'S HEALTH BY ENHANCING THE PRIMARY CARE/PUBLIC HEALTH INTERFACE IN THE UNITED STATES

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

November 2002

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

TABLE OF CONTENTS

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY v

ABSTRACT 1
- Conclusion 1

EXECUTIVE SUMMARY 3
- Introduction 3
- Title VII, Section 747: Improving Access 3
- Title VII, Section 747: Improving Preparedness for Health Emergencies 3
- Title VII, Section 747: Improving Alliance of Public Health and Primary Care Medicine and Dentistry 4
- Collaborations of Public Health and Primary Care Medicine and Dentistry 5
- Conclusions 5
- Recommendations 5

ADVISORY COMMITTEE REPORT TO THE SECRETARY OF THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES AND TO CONGRESS 9
- Introduction 9
- Title VII, Section 747: Fulfilling Critical Missions 9
- Title VII, Section 747: Improving Access 10
- Title VII, Section 747: Improving Preparedness for Health Emergencies 10
- 2002 Meeting of the Advisory Committee 11
- The Compelling Need for an Enhanced Alliance Between Public Health and Primary Care Medicine and Dentistry 11
- Title VII, Section 747: Readying the Nation's Health Care Workforce 12
- Models of Collaboration of Public Health and Primary Care Medicine/Dentistry 13
- Conclusions 20
- Recommendations 20

REFERENCES 23

APPENDICES

APPENDIX A: PLENARY SPEAKERS – BIOGRAPHIES AND PRESENTATIONS 27
- Jeffrey Dunlap: HRSA Public Health and Bioterrorism Programs and Primary Care Clinicians 29
- David Satcher: *Healthy People 2010*: The Partnership between Public Health and Medicine 33
- Laurie Garrett: Betrayal of Trust 41
- Doug Campos-Outcalt: The Challenge of Reforming Education to Improve Access to Unified Interdisciplinary Public Health Services for People in Underserved Rural and Urban Communities 49
- Debbie Ward: The Challenge of Reforming Education and Practice to Foster the Delivery of Primary Care and Public Health Services through Interdisciplinary Teams 57
- Nicole Lurie: Strategies to Address Acute and Chronic Public Health Issues through Primary Care Providers 63

APPENDIX B: WORKGROUP A – IMPROVING ACCESS 69
Workgroup Participants 69
Workgroup Charge 69
Workgroup Summary 70

APPENDIX C: WORKGROUP B – INTERDISCIPLINARY TEAMS FOR PUBLIC HEALTH 75
Workgroup Participants 75
Workgroup Charge 75
Workgroup Summary 76

APPENDIX D: WORKGROUP C – ACUTE AND CHRONIC PUBLIC HEALTH ISSUES 81
Workgroup Participants 81
Workgroup Charge 81
Workgroup Summary 82

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE AND DENTISTRY

Section 748 [2931] of the Health Professions Partnerships Act of 1998 authorizes 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 shall be authorized to carry out the following activities:

(1) Provide advice and recommendations to the Secretary concerning policy and program development and other matters of significance concerning the activities under section 747; and

(2) Not later than three years after the date of enactment of this section, and annually thereafter, prepare and submit to the Secretary, and 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.

ADVISORY COMMITTEE MEMBERS

Billie Wright Adams, M.D., F.A.A.P.
Primary Care Pediatrician
Clinical Associate Professor
Department of Pediatrics
University of Illinois, Chicago
Chicago, Illinois

Ruth M. Ballweg, M.P.A., P.A.-C.
Program Director
MEDEX Northwest PA Program
University of Washington School of Medicine
Seattle, Washington

George Blue Spruce, Jr., D.D.S., M.P.H.
President
Society of American Indian Dentists
Surprise, Arizona

Frank A. Catalanotto, D.M.D.
Professor of Pediatric Dentistry
University of Florida School of Dentistry
Gainesville, Florida

James J. Crall, D.D.S., D.Sc.
Associate Professor
Maternal and Child Health Bureau
National Oral Health Policy Center
Columbia University School of Dental and Oral Surgery
New York, New York

J. Thomas Cross, Jr. , M.D., M.P.H.
Vice President for Education
MedStudy Corporation
Woodland Park, Colorado

Thomas G. DeWitt, M.D.
The Carl Weihl Professor and Director
Division of General and Community Pediatrics
Children's Hospital Medical Center
Cincinnati, Ohio

Staci E. Dixon, D.O.
Private Practice Family Physician
BG Family Care Center
Bowling Green, Ohio

Julia Flanagan, M.P.H., P.A.-C.
Physician Assistant
Exton, Pennsylvania

Ronald D. Franks, M.D.
Dean of Medicine and Vice President for Health Affairs
James H. Quillen College of Medicine
East Tennessee State University
Johnson City, Tennessee

John J. Frey III, M.D.
Professor and Chair
Department of Family Medicine
University of Wisconsin-Madison Medical School
Madison, Wisconsin

Julea G. Garner, M.D.
Private Practice Family Physician
Glencoe, Arkansas

Ryan J. Hughes, D.D.S.
Private Practice Dentist
Portland, Oregon

Ronald S. Mito, D.D.S., FDS RCS (Ed)
Associate Dean
Clinical Dental Sciences
UCLA School of Dentistry
Los Angeles, California

Carlos A. Moreno, M.D., M.S.P.H.
Professor and Chair
Department of Family Practice and Community Medicine
University of Texas-Houston Medical School
Houston, Texas

Harry J. Morris, D.O., M.P.H.
Chair, Department of Family Medicine
Philadelphia College of Osteopathic Medicine
Philadelphia, Pennsylvania

Maxine A. Papadakis, M.D.
Associate Dean for Student Affairs
UCSF School of Medicine
San Francisco, California

Denise V. Rodgers, M.D., Chair
Associate Dean for Community Health
Robert Wood Johnson Medical School
University of Medicine and Dentistry of New Jersey
New Brunswick, New Jersey

Joseph E. Scherger, M.D., M.P.H.
Dean, College of Medicine
Florida State University
Tallahassee, Florida

Terrence E. Steyer, M.D.
Assistant Professor of Family Medicine
Medical University of South Carolina
Charleston, South Carolina

Valerie E. Stone, M.D., M.P.H.
Associate Chief
General Internal Medicine Unit
Massachusetts General Hospital
Boston, Massachusetts

Justine Strand, M.P.H., P.A.-C.
Chief, Physician Assistant Division
Department of Community and Family Medicine
Duke University Medical Center
Durham, North Carolina

REPORT WRITING GROUP

John J. Frey III, M.D., Chair

Frank A. Catalanotto, D.M.D.

James J. Crall, D.D.S., D.Sc.

Ronald S. Mito, D.D.S., FDS RCS (Ed)

Denise V. Rodgers, M.D.

Terrance E. Steyer, M.D.

Rhonda Ray, Ph.D., Contractor

ABSTRACT

The purpose of Title VII, section 747 is to train diverse, broadly competent primary care physicians, physician assistants, and dentists to meet the health care needs of all Americans. Compared to all U.S. primary care medical and dental training programs, Title VII, section 747 programs have achieved the following successes:

- Graduates are four to five times more likely (42-56 percent versus 10 percent) to work in medically underserved communities.[1]
- Graduates are three to five times more likely (35-50 percent versus 10 percent) to come from underrepresented minority or disadvantaged groups.[1]

Despite the successes of Title VII, section 747 programs in strengthening the Nation's primary care capacity, the health emergencies following September 11, 2001, revealed gaps between primary care medicine and dentistry and the public health infrastructure. Increased support for these programs will help develop public health competencies for primary care medicine and dentistry and better prepare this front-line workforce to respond to ongoing public health concerns, including health emergencies.

To increase the preparedness of both public health professionals and primary care medical and dental providers, systematic linkages between public health and primary care physicians, physician assistants, and dentists should be established, replicated, and fiscally supported. Enhanced public health training for the Nation's primary care medical and dental providers will protect and improve the health of America.

Recommendation 1

To avoid undermining the effectiveness of current programs, Title VII, section 747 requires continued support and additional funding.

Recommendation 2

Training and education to develop essential public health competencies should be encouraged for all primary care medical, dental, and physician assistant programs supported by Title VII, section 747.

Recommendation 3

All primary care physicians, dentists, and physician assistants should be educated and trained in knowledge management and use of information technology to access and communicate information about public health issues.

Recommendation 4

Examples of Title VII, section 747 programs that successfully train providers with broad public health competencies should be widely disseminated to communities of interest.

CONCLUSION

As highlighted in the 2001 report of the Advisory Committee on Training in Primary Care Medicine and Dentistry, programs funded by Title VII, section 747 can rapidly introduce curricula and approaches to facilitate responses to emerging public health issues, such as the health care emergencies evident in the aftermath of September 11, 2001. Meeting the growing challenges facing primary care education without undermining the effectiveness of current programs requires an annual appropriation of $198 million, as indicated in the Advisory Committee's 2001 report.[2]

EXECUTIVE SUMMARY

INTRODUCTION

Title VII, section 747 has been instrumental in creating a supply of diverse, broadly competent primary care physicians, physician assistants, and dentists. From its beginnings, Title VII, section 747 has helped develop and expand training programs for these primary care health professions.[3] Further, primary care medical and dental programs supported by Title VII, section 747 have outperformed the average of all U.S. training programs for these health professions programs:

- In 1998, 42-56 percent of graduates of these programs entered practice in underserved communities, compared to a mean of 10 percent of U.S. health professions graduates overall.[1]
- In 1998, underrepresented minority or disadvantaged groups comprised 35-50 percent of graduates of programs supported by Title VII, section 747, compared to a 10 percent minority representation among the U.S. health professions workforce overall.[1]

TITLE VII, SECTION 747: IMPROVING ACCESS

Access to health care and preventive services is critical for improving the health of all Americans and especially for reducing health disparities between majority and minority populations. In addition to geographic, financial, or structural barriers to health care, personal and cultural barriers such as language or ethnicity often prohibit access to health care.

Title VII, section 747 has supported increased diversity among health care professionals and among faculty who train providers. This increased diversity in turn facilitates cultural competence and helps overcome barriers to health care for minority and disadvantaged populations.[4] According to the 2000 census, minorities comprise 25 percent of the Nation's population.[5] Minority physicians are five times more likely to provide care for medically underserved and vulnerable populations that are often sicker, poorer, and more disadvantaged than patients served by non-minority physicians.[6]

Incentives, including financial ones, have often been needed to facilitate access to health care in rural and underserved communities or among the disadvantaged.[7] Health care is also needed by an estimated 44.3 million people (more than 15 percent of the U.S. population under age 65) who have no health insurance and by millions more who have inadequate coverage.[8] In addition to increasing the number of clinicians who serve medically underserved and disadvantaged populations, clinical training programs supported by Title VII, section 747 provide direct care to these populations.

Many challenges remain to be overcome before parity of health outcomes can be achieved for all population groups. Support for Title VII, section 747 remains critical for increasing access to health care and increasing diversity of primary care providers.

TITLE VII, SECTION 747: IMPROVING PREPAREDNESS FOR HEALTH EMERGENCIES

Despite the successes of Title VII, section 747 programs in strengthening the Nation's primary care capacity, the health emergencies following September 11, 2001, revealed gaps between primary care medicine and dentistry and the public health infrastructure. These weaknesses have prompted an examination of the preparedness of the health care workforce to respond to health emergencies. Like previous health events such as the first cases of AIDS, the anthrax cases served as sentinel health events signaling emerging health threats. Inefficiencies in the health care response to these health emergencies indicate a critical need for increased communication and collaboration between public health professionals and the health care workforce, particularly primary care providers. These providers serve on the frontlines of health care and interact with two-thirds of all Americans, more than any other type of clinician.[9]

One of the lessons learned from these unprecedented events is that adequate preparedness to handle such emergencies is necessary to protect the health of the American public. This preparation entails joint efforts and a shared core of knowledge among public

health professionals and primary care providers, who are typically the "first responders" who identify and manage cases resulting from public health emergencies. The Nation's disadvantaged and underserved populations—those most likely to be served by Title VII, section 747 programs and graduates—are also the populations most vulnerable in medical emergencies because of their lack of resources and lack of access to care.

Title VII, section 747 is an ideal mechanism for enhancing the preparedness of primary care physicians, physician assistants, and dentists to respond to health emergencies and meet the health care needs of all Americans. This report of the Advisory Committee on Training in Primary Care Medicine and Dentistry addresses the need to enhance the public health competencies of primary care physicians, physician assistants, and dentists and thus strengthen America's health care workforce and public health infrastructure.

TITLE VII, SECTION 747: IMPROVING ALLIANCE OF PUBLIC HEALTH AND PRIMARY CARE MEDICINE AND DENTISTRY

The events following September 11, 2001, more than anything in recent history, revealed the weaknesses in the public health infrastructure, stated former Surgeon General Dr. David Satcher to the Advisory Committee at its meeting on May 13-14, 2002. This infrastructure, as defined by Satcher, has three key components: public health practitioners at the local, State, and national level; primary care and other health practitioners who provide health care to individuals; and the public, whose need to know when and how to respond to health threats is more critical than ever.[10]

Only by working together to maximize knowledge and resources will the Nation's health care providers and public health professionals be adequately prepared to protect and enhance the health of all citizens. As noted by an Advisory Committee workgroup at the May 13-14, 2002 meeting, no one, rich or poor, young or old, can hide from the health threats facing the Nation.[11] The future effectiveness of public health and of primary care medicine and dentistry necessitates a broad understanding of the major challenges to the health of populations.[12]

Historically, practitioners of public health and primary care medicine and dentistry have trained and operated separately. As noted by one speaker at the meeting of the Advisory Committee, these disciplines "have different jobs that require different skills."[13] However, the work and skills of both disciplines are needed to address ongoing and emerging public concerns. Public health and primary care medicine and dentistry must be able to collaborate effectively to ensure the safety and well being of our Nation.

Medical and other health care practitioners play an important role in enhancing public health, but to maximize that role, systemic barriers need to be overcome.[7,13] Public health should interface more with primary care medicine and dentistry, and medical and dental education is one important means of effectively impacting systems of health care to accomplish public health objectives. Medical and dental education programs can strategically create better communication and collaboration with the public health community by promoting core public health competencies for primary care physicians, dentists, and physician assistants.

An educational alliance between public health professionals and primary care physicians, dentists, and physician assistants will equip the Nation's health care workforce for a more effective response to public health concerns, including health emergencies. The events following September 11, 2001, illuminate the importance of a cohesive, cooperative response from both the public health community and the health care community. Collaborations between public health and primary care medicine and dentistry are essential to build bridges that will facilitate prevention, rapid detection, and appropriate treatment of biological, environmental, and nuclear events that threaten the American public. These bridges will create better surveillance and assessment activities to determine and monitor health status indicators. The bridges will also increase access to health care and decrease adverse health events, including diseases, disabilities, and trauma.

Keynote speaker Laurie Garrett observed at the Advisory Committee meeting that the United States spends 1.3 trillion dollars on health or more than 13 percent of the Gross Domestic Product (GDP).[14] Despite this vast injection of national resources into health care, the Nation ranks 24th in the world in disability-adjusted life expectancy. Other countries such as Canada or Japan spend far less of their GDP, yet greatly exceed the United States in health status indicators. Further, most of the health care spending in the United States is directed towards treatment and management of disease, and a substantial portion of health care dollars is spent on the last 30 days of life. In comparison, less than two percent of

the Nation's health spending is devoted to public health.[15] Clearly, the priorities for health spending in this country need to be reviewed.

COLLABORATIONS OF PUBLIC HEALTH AND PRIMARY CARE MEDICINE AND DENTISTRY

Despite the gaps existing between public health professionals and primary care physicians, physician assistants, and dentists, efforts have been made to construct alliances between public health professionals and health care practitioners. Both public health and primary care medicine address infectious diseases such as tuberculosis through prevention and treatment. Recent emerging infections such as HIV create bridges between public health and primary care medicine and dentistry, as providers are concerned not only with treatment options, but also with standard precautions to prevent the spread of infections. The recent emergence of West Nile Virus produced collaborative efforts among public health workers and primary care medical providers in identifying this source of illness through patterns observed by practitioners and investigated by public health epidemiologists. Despite such collaborations, links between public health and primary care medicine and dentistry often fall short of meaningful integration.

In recent years, greater collaboration of public health with medicine and dentistry has been the vision and objective of organizations and individuals who foresee a healthier Nation enhanced by prevention-oriented and population-based health care. Reports have addressed the untapped possibilities of this collaboration and have identified models of collaborative experiments.[16-21] However, the reform of medical and dental education to create a formal collaboration between public health and primary care medical providers and dentists requires fiscal and institutional support. Although collaborative models exist, few training programs for primary care physicians, physician assistants, or dentists have required all students to obtain public health competencies or gain experience in clinical practice with medically underserved and disadvantaged populations.[22] Further, few faculty who have public health competencies or experience in providing health care to the underserved and the disadvantaged are available to serve as role models for trainees.[7] Nevertheless, existing models can provide important lessons for medical and dental programs seeking to prepare trainees to participate more fully in community-oriented and population-based medicine and dentistry.

CONCLUSIONS

Current programs supported by Title VII, section 747 are critical to fulfilling key public health missions: enhancing the training of broadly competent primary care physicians, physician assistants, and dentists; increasing access to health care among underserved and disadvantaged populations; and promoting diversity in the health professions. The need to establish a more effective alliance between public health and primary care medicine and dentistry is imperative. Title VII, section 747 is an ideal vehicle for reforming medical and dental education to assure that providers have core public health competencies needed to meet the Nation's health care needs.

Not only must health care providers be better prepared to respond to bioterrorism and other emerging health threats, but public health training for primary care medical and dental providers is an unprecedented opportunity to increase prevention efforts and reduce health disparities and adverse health outcomes. The goals of *Healthy People 2010*—to extend life expectancy and reduce health disparities[23]—can be better and more rapidly achieved through public health training supported by Title VII, section 747. Incorporating public health competencies and skills at the program level and through accrediting organizations is also important for long-term reform of health care and health outcomes.

Meeting the growing challenges that face primary care education without undermining the effectiveness of current programs requires an annual appropriation of $198 million, as indicated in the 2001 report of the Advisory Committee.[2]

RECOMMENDATIONS

I. **To avoid undermining the effectiveness of current programs, Title VII, section 747 requires continued support and additional funding.** Title VII, section 747 has been instrumental in creating a diverse, broadly competent primary care medicine and dentistry workforce for the Nation. Expansion of core Title VII, section 747 funding is needed to fulfill its purposes: to train a supply of primary care physicians, physician assistants, and dentists to provide health care to American communities, especially to disadvantaged populations and underserved communities that might lack access otherwise, and to promote diversity among primary care medical and dental providers.

Title VII, section 747 has had dramatic impacts on primary care medical and dental training and on the health care providers who graduate from programs awarded Title VII, section 747 funding. Medical and dental training programs funded by Title VII, section 747 have developed innovative curricula in HIV/AIDS, geriatrics, managed care, domestic violence, genetics, culturally competent care, and rural health.[3] Family medicine, general internal medicine, general pediatrics, physician assistant, and general and pediatric dentistry programs have developed and expanded due to Title VII, section 747 support. Title VII, section 747 has also helped increase primary care research, which makes primary care medicine a more attractive career option for residents and improves the quality of primary care among patients.[3]

Primary care medicine, physician assistant, and dentistry programs supported by Title VII, section 747 have emphasized service of their graduates in medically underserved communities and among disadvantaged populations. In 1998, 42-56 percent of graduates of these programs entered practice in underserved communities, compared to a mean of 10 percent of U.S. health professions graduates overall. Further, data for 1998 indicate that 35-50 percent of graduates of programs supported by Title VII, section 747 represented minority or disadvantaged groups, compared to a 10 percent minority representation among the U.S. health professions workforce overall.[1] Evidence indicates that these graduates are five times more likely to practice among underserved communities and disadvantaged populations.[6] Continued institutional and fiscal support is needed to sustain these achievements of increased health care access and increased proportions of minorities in the health professions.

II. TRAINING AND EDUCATION TO DEVELOP ESSENTIAL PUBLIC HEALTH COMPETENCIES SHOULD BE ENCOURAGED FOR ALL PRIMARY CARE MEDICINE, DENTISTRY, AND PHYSICIAN ASSISTANT PROGRAMS SUPPORTED BY TITLE VII, SECTION 747. To prepare a health care workforce to respond more effectively to ongoing public health concerns and public health emergencies, public health training needs to become a part of primary care medicine, physician assistant, and dentistry education. To facilitate development of these competencies, programs should initiate the following activities:

A. ***Define minimal competencies needed for providers to respond to population-based health concerns, including bioterrorism; design curricula to develop these competencies; and establish procedures for assessing these competencies in trainees.*** To help guide programs, a list of "Core Competencies in Disease Prevention and Health Promotion for Undergraduate Medical Education" has been established by the Medical School Objectives Project, convened by the Association of American Medical Colleges.[24] Similarly, the American Dental Education Association has developed a list of core competencies that incorporates community-based health education and promotion competencies needed by dentists entering practice.[25]

B. ***Develop educational modules to help train primary care physicians, physician assistants, and dentists to respond to public health concerns, including bioterrorism and other emerging health problems.*** Educational modules and simulations are important tools for applied learning and dissemination of increasingly complex subject content. To prepare students for events that can only be anticipated, such methods create virtual approximations of actual events.

C. ***Encourage collaboration of Federally funded programs training public health professionals and Title VII, section 747-funded programs training primary care medical and dental providers.*** Interdisciplinary efforts that cross traditional program boundaries are important for creating needed bridges between public health and primary care. Such collaborations serve as models and maximize effectiveness of public funds.

D. ***Encourage research between public health faculty and medical and dental faculty to facilitate collaborative practices in primary care medicine and dentistry.*** Cross-disciplinary collaborations model and facilitate alliances between public health and primary care and illustrate interdisciplinary teams, synergies, and best use of joint resources.

E. ***Create leadership training courses that focus on developing alliances between public health and primary care medicine***

and dentistry. Leadership is requisite for facilitating change within training programs and communities. Faculty and trainees skilled in facilitating and leading alliances between public health and primary care medicine and dentistry are needed to ensure successful collaborations.

F. ***Develop incentives for recruitment, development, and support of faculty who have training and experience in public health and who have provided health care to underserved communities and disadvantaged populations.*** Public health-oriented faculty are needed to serve as role models for trainees and to develop curricula that utilize their expertise and experience, yet studies indicate various difficulties involved in recruiting and retaining clinician-educators.[26-27]

G. ***Encourage faculty development programs that link primary care medical and dental faculty with the public health community.*** Lifelong learning and institutional support for faculty are considered important characteristics of quality medical education programs.[28] To develop faculty who have public health competencies and who can model those competencies for trainees, faculty development should include opportunities for community-based and population-based practice.

H. ***Ensure that public health training for primary care physicians, physician assistants, and dentists is both didactic (classroom based) and experiential (applied).*** Educational methods instilling public health competencies need to be both classroom based and field based. Students learn by observing and doing, not just by hearing. Faculty development should also include both classroom and field experiences to enhance faculty's public health knowledge.

I. ***Encourage accrediting bodies to develop measures that ensure up-to-date public health training for all levels of learners (i.e., students, residents, faculty, and community-based practitioners).*** Few incentives currently exist to encourage primary care medical and dental education programs to incorporate public health into their curricula. However, policies can offer those incentives.[7] Requiring public health competencies for program accreditation would compel medical and dental programs to implement coursework and clinical requirements into their training.

J. ***Encourage collaborations with programs funded by sources other than Title VII, section 747.*** Many programs that fall outside the purview of Title VII, section 747 are involved in public health at some level, including social work and legal professions programs. Title VII, section 747 programs should seek collaborations with these programs, some of which provide models of interdisciplinary efforts, such as those achieved in preventive medicine residencies and bioinformatics programs.

III. **ALL PRIMARY CARE PHYSICIANS, DENTISTS, AND PHYSICIAN ASSISTANTS SHOULD BE EDUCATED AND TRAINED IN KNOWLEDGE MANAGEMENT USING INFORMATION TECHNOLOGY TO ACCESS AND COMMUNICATE INFORMATION ABOUT PUBLIC HEALTH ISSUES.** As more information becomes available on the Web, primary care providers and dentists need to be able to access and use this information. Information technology systems enhance surveillance, coordination of patient care, and management of emerging public health issues within communities. They can be used to track patients, maintain disease registries, and electronically submit reports of reportable illnesses. Further, the Internet and e-mail are ideal for communicating and disseminating information.

IV. **EXAMPLES OF TITLE VII, SECTION 747 PROGRAMS THAT SUCCESSFULLY TRAIN PROVIDERS WITH BROAD PUBLIC HEALTH COMPETENCIES SHOULD BE WIDELY DISSEMINATED TO COMMUNITIES OF INTEREST.** The Health Resources and Services Administration should identify and disseminate information about programs that successfully produce trainees demonstrating strong public health competencies. Model training programs having successful public health outcomes illustrate what approaches work best and what problems must be overcome.

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

DELIVERING THE GOOD: IMPROVING THE PUBLIC'S HEALTH BY ENHANCING THE PRIMARY CARE/PUBLIC HEALTH INTERFACE IN THE UNITED STATES

INTRODUCTION

Title VII, section 747 has been instrumental in creating a supply of diverse, broadly competent primary care physicians, physician assistants, and dentists in the United States. Since 1976, with the enactment of the Health Professions Educational Assistance Act, Title VII funding has supported the development and expansion of training programs for primary care medicine and dentistry, especially to increase health care access for medically underserved communities and disadvantaged populations. Support from Title VII, section 747 has also been important for health professions experiencing critical shortages of both providers and faculty for training programs (e.g., dentistry) and for promoting and increasing racial and ethnic diversity among primary care physicians, physician assistants, and dentists.

TITLE VII, SECTION 747: FULFILLING CRITICAL MISSIONS

Studies indicate that primary care medical and dental programs supported by Title VII, section 747 have successfully fulfilled goals of this legislation and that correlations exist between graduates of programs funded by Title VII, section 747 and increases in desired outcomes.[29-31] Providers graduating from Title VII, section 747 programs outperform graduates of all U.S. primary care medical and dental training programs in key ways:

- Title VII, section 747 graduates are four to five times more likely (42-56 percent versus 10 percent) to work in medically underserved communities.[1]
- Title VII, section 747 graduates are three to five times more likely (35-50 percent versus 10 percent) to come from underrepresented minorities or disadvantaged groups.[1]

Further, providers who attended programs funded by Title VII, section 747 have higher rates of desired practice outcomes than those who attended programs not funded by Title VII, section 747:

- Graduates of Title VII, section 747 programs are 17 percent more likely to choose primary care specialties (36.3 percent versus 30.9 percent).[29]
- Students of Title VII, section 747 programs are 55 percent more likely to choose family practice specialties (15.8 percent versus 10.2 percent.[29]
- Family physicians graduating from both medical school and residency programs funded by Title VII, section 747 are 20 percent more likely to practice in impoverished areas (11.9 percent versus 9.9 percent) and 12 percent more likely to practice in rural communities (24.5 percent versus 21.8 percent) than those attending a medical school and residency not funded by Title VII, section 747.[31]

Title VII, section 747 has also helped accomplish other important objectives:

- Medical and dental training programs funded by Title VII, section 747 have developed innovative curricula in HIV/AIDS, geriatrics, managed care, domestic violence, genetics, culturally competent care, and rural health. This funding has been perhaps the most important vehicle for structural changes in training programs, including demonstration programs such as the Interdisciplinary Generalist Curriculum and Undergraduate Medical Education for the 21st Century.[3]
- Title VII, section 747 has helped to support dental education at a time when the Nation is experiencing a critical shortage of dental faculty. This shortage threatens the future of dental education and access to dentistry.[32-33]

- Family medicine, general internal medicine, and general pediatrics programs have expanded, largely due to Title VII, section 747 support. Similarly, physician assistant programs, which have developed with the help of funding from Title VII, section 747, are training highly skilled health care providers who are integral to the health care delivery system. Further, dental training programs, both general and pediatric, have expanded and grown with the assistance of Title VII, section 747 support.[3]
- Title VII, section 747 has also been responsible for an increase in research opportunities in primary care medicine. Research fellows completing their training in family medicine, general internal medicine, and general pediatrics have increased in number and quality due to Title VII, section 747 support. These expanding levels of research help make primary care medicine a more attractive career option for residents and also improve the quality of primary care among patients.[3]

Continued fiscal support is needed to sustain these achievements of increased health care access, increased proportions of minorities in the health professions, and expansion and development of needed primary care medical and dental programs.

TITLE VII, SECTION 747: IMPROVING ACCESS

Access to health care and preventive services is critical for improving the health of all Americans and especially for reducing health disparities among population groups. In addition to geographic, financial, or structural barriers to health care, personal and cultural barriers such as language or ethnicity often prohibit access to health care.

Title VII, section 747 has supported increased diversity among health care professionals and among faculty who train providers. This increased diversity in turn facilitates cultural competence and helps overcome barriers to health care for minority and disadvantaged populations.[4] According to the 2000 census, minorities represent 25 percent of the Nation's population.[5] Minority physicians are five times more likely than non-minority physicians to provide care for medically underserved and vulnerable populations. These populations are often sicker, poorer, and more disadvantaged than patients served by non-minority physicians.[6]

Incentives, including financial ones, have often been needed to facilitate access to health care in rural and underserved communities or among the disadvantaged.[7] Further, an estimated 44.3 million people (more than 15 percent of the U.S. population under age 65) have no health insurance, and millions more have inadequate health care coverage.[8] These under-insured populations also need access to health care. In addition to increasing the number of clinicians who practice in medically underserved communities and among disadvantaged populations, clinical training programs supported by Title VII, section 747 provide direct care to medically underserved communities and disadvantaged populations.

Many challenges must be overcome before parity of health outcomes can be achieved for all U.S. populations. Support for Title VII, section 747 remains critical for expanding access to health care and increasing diversity of primary care providers.

TITLE VII, SECTION 747: IMPROVING PREPAREDNESS FOR HEALTH EMERGENCIES

Despite the successes of Title VII, section 747 programs in strengthening the Nation's primary care capacity, the health emergencies following September 11, 2001, served as a wake-up call to alert Americans to national health vulnerabilities. As with past health events such as the first cases of AIDS, the health emergencies of 2001 can be viewed as sentinel events signaling emerging health threats. These events sounded another alarm that became obvious with the recognition of a potential anthrax epidemic: a critical need for more cohesion and alliance of the U.S. health care and public health systems.

Inefficiencies in responses to these health emergencies indicate a critical need for increased communication and collaboration between public health professionals and the health care workforce, particularly primary care providers. These providers serve on the frontlines of health care and interact with two-thirds of all Americans, more than any other type of clinician.[9]

One of the lessons learned from these unprecedented events is that adequate preparedness to handle such emergencies is necessary to protect the health of the American public. The Nation must prepare a health care workforce that can respond effectively and efficiently to public health concerns, including emergency and emerging health events and community-oriented and population-based prevention of chronic and acute illnesses. This preparation entails joint efforts and a common core of knowledge among public health professionals

and primary care providers, who are usually "first responders" who identify and manage cases resulting from public health emergencies. The Nation's disadvantaged and underserved populations, those most likely to be served by Title VII, section 747 programs and graduates, are also the populations most vulnerable during medical emergencies because of their lack of resources and lack of access to care.

Training is key to preparedness. Title VII, section 747 is an ideal mechanism for educating primary care providers in public health competencies, facilitating population-based and community-based skills and training, and increasing the alliance between public health and primary care providers.

2002 MEETING OF THE ADVISORY COMMITTEE

To consider ways in which Title VII, section 747 can help prepare a primary care medical and dental workforce that interfaces more effectively with public health, the Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) met in Washington, D.C., on May 13-14, 2002. Six speakers at this meeting made presentations to the Committee to provide a context in which to consider medical and dental education that facilitates collaborations with public health (See Appendix A). During the meeting, three break-out workgroups spent many hours addressing issues of reform of medical and dental education to enhance the alliance between public health and primary care medicine and dentistry. The workgroups each focused on public health training strategies for one of the following topics: increasing access, using interdisciplinary teams, and addressing acute and chronic health issues. (See Appendices B,C, and D.) The ideas and recommendations emerging from this meeting and from the workgroups form the basis of this report.

THE COMPELLING NEED FOR AN ENHANCED ALLIANCE BETWEEN PUBLIC HEALTH AND PRIMARY CARE MEDICINE AND DENTISTRY

Former Surgeon General Dr. David Satcher stressed in his presentation to the Committee that the events following September 11, 2001, more than anything else in recent history, revealed weaknesses in the public health infrastructure. This infrastructure, as defined by Satcher, has three key components: public health practitioners at the local, State, and national level; primary care and other health practitioners who provide medical care to individuals; and the public, whose need to know when and how to respond to health threats is more critical than ever.[10]

Only by working together to maximize knowledge and resources will the Nation's health care providers and public health professionals be best able to protect and enhance the health of all citizens. As one workgroup stated, rich or poor, young or old, no one can hide from the health threats facing us today.[11] The future of public health and of primary care medicine and dentistry depends on a broad understanding of the major challenges facing the health of populations in the twenty-first century.[12]

Over a quarter of a century ago, *Higher Education for Public Health* stated that "public health activities change with changing technology and social values, but the goals remain the same: to reduce the amount of disease, premature death and disease-produced discomfort and disability."[12] With the increases in scientific knowledge, emerging health threats, risks from environmental pollutants, awareness of factors impacting physical and psychological health, and shifting paradigms of approaches to disease control and prevention, America's health needs and priorities continue to be in a state of flux. The public health infrastructure must also adapt to external forces if it is to continue to protect and improve the public's health.

Healthy People 2010 defines the public health infrastructure as "the resources needed to deliver the essential health services to every community . . . ."[34] Essential health care is not limited to making sure that everyone who is ill has access to a physician. The public health approach seeks to prevent illness and thus circumvent the need for many visits to physicians. More collaborative efforts of primary care and public health will strengthen the public health infrastructure so that it is better prepared to respond to health emergencies, emerging illnesses, and acute and chronic health problems.

The 1988 Institute of Medicine report, *The Future of Public Health*, identified three "core functions" of public health, also referred to in *Healthy People 2010*: assessment, which includes surveillance activities to measure health status; policy development, which encompasses regulations and laws needed to protect the public's health; and assurance of access, which entails provision of health care, a critical component in achieving and maintaining a healthy Nation.[34]

Access to health care is possible only through a commitment of sufficient resources to train an adequate supply of primary care providers who can deliver care. Access to health care for underserved communities and disadvantaged populations is possible only through a commitment by primary care medical providers and dentists to serve these communities and populations. Securing and sustaining a supply of providers who can provide health care, especially to the underserved and the disadvantaged, has been a major objective of Title VII, section 747.

Although the missions of public health and primary care medicine and dentistry are to enhance the health of the Nation, these health professions have had seemingly different objectives for almost a century. As Pulitzer prize-winning author Laurie Garrett stated in her address to the Advisory Committee, "The task now is to figure out where the lines [between primary care and public health] are and how everything is really defined—not how they have come to be defined inaccurately and mistakenly in the latter half of the twentieth century, but what constitutes appropriate definitions of primary care and public health as we go into the twenty-first century."[15]

As Garrett observed, the United States spends 1.3 trillion dollars on health or more than 13 percent of the Gross Domestic Product (GDP).[14] Despite this vast injection of national resources into health care, the Nation ranks 24th in the world in disability-adjusted life expectancy. Other countries such as Canada or Japan spend far less of their GDP, yet greatly exceed the United States in health status indicators. Further, most of the health care spending in the United States is directed towards treatment and management of disease, and a substantial portion of health care dollars is spent on the last 30 days of life. In comparison, less than two percent of the Nation's health spending is devoted to public health. Public health interventions have been the main reason for increased life expectancy, yet most U.S. health dollars are spent elsewhere.[15] Clearly, the priorities for health spending in this country need to be reviewed.

Despite gaps between public health and primary care medicine and dentistry, constructive alliances have been formed. Historically, infectious diseases such as tuberculosis have gained the attention of both public health and primary care medicine and dentistry because of a need for both treatment and rigorous prevention. Recent emerging infections such as HIV have resulted in bridges between public health and primary care medicine and dentistry, as providers are concerned not only with treatment options, but also with standard precautions to prevent the spread of infections. The recent emergence of West Nile Virus produced collaborative efforts among public health and primary care medical providers in identifying this source of illness through patterns observed by health care practitioners and investigated by public health epidemiologists. In addition, economic disparities in dental health have prompted public health interventions to expand dental care, especially for children. According to the American Dental Education Association, "Oral health is increasingly perceived as an important aspect of overall health, and the evidence of a connection between oral and systemic diseases is growing."[32]

Even with successful collaborations, links between public health and primary care medicine and dentistry often fall short of meaningful integration. A more extensive and systematic interface between public health and primary care medicine and dentistry is needed. Title VII, section 747 can help foster this collaborative enterprise between primary care and public health at the most fundamental level—education and training.

TITLE VII, SECTION 747: READYING THE NATION'S HEALTH CARE WORKFORCE

Public Health Emergency Preparedness: A Policy Primer examines central questions regarding the Nation's public health system in the wake of September 2001: "Who should be responsible for providing a public health response in the event of an emergency? What resources are needed to be prepared? How can the nation ensure an adequate return on its investments in public health?"[35] This National Health Policy Forum publication stresses that preparation for health emergencies such as bioterrorism entails various prevention and response activities: regulation of environmental conditions and food and water supplies, plans for emergency medical and public health responsiveness, detection of outbreaks of illnesses, epidemiological investigations of diseases, and laboratory analysis in support of surveillance and epidemiology. The majority of these activities involve coordinating efforts, training the public and private sectors for improved preparedness, and building partnerships among important constituents, including primary care medicine and public health.[36] Bioterrorism has highlighted the potential, the importance, and, indeed, the necessity of joint efforts of health care practitioners, the public health sector, and the public.

Primary care providers and dentists are integral to the development of an effective public health infrastructure in the United States. They interact with the public on a direct basis, are the source of reports used for surveillance, and are usually the first to note unusual patterns of disease and illness. They also act as important channels for communication of medical information and are ideally situated to mediate health concerns among public health professionals, the public, policymakers, and administrators.

Effective collaboration between public health professionals and primary care medical and dental providers entails systemic changes to facilitate that collaboration. Public health needs to better understand the challenges facing primary care physicians, physician assistants, and dentists, and these health professionals need more public health skills. Currently, most primary care medical and dental providers receive little training in public health or community-based health care. Further, as noted by Dr. Nicole Lurie, more faculty and clinical role models who are committed to public health objectives in their practices and teaching are needed. Without such models to illustrate and teach public health practices, students and residents repeat the prevailing models.[7] However, recruiting and retaining clinician-educators are difficult because of the traditional demands of research expected of faculty and the lack of parity between faculty salaries and clinical practice incomes.[26-27] Programs that train primary care medical and dental providers establish professional priorities and critical competencies that providers are expected to have as they go into practice. The current landscape of health and health threats in America indicates the wisdom and necessity of expending efforts and resources to include public health competencies in medical and dental education.

MODELS OF COLLABORATION OF PUBLIC HEALTH AND PRIMARY CARE MEDICINE/DENTISTRY

The need for greater collaboration of public health and medicine has been the focus of many organizations and individuals who have a vision of a healthier Nation enhanced by prevention-oriented and population-based health care. Reports have addressed the untapped potential of this collaboration and have identified useful models of collaboration between public health and primary care medicine or dentistry. While agreement is unanimous regarding the immense benefits that result from the interface of primary care and public health, consensus is fragmented regarding the kinds of partnerships needed to enable a successful unification of primary care and public health.[37]

According to recent studies, the model of medical training in academic health centers needs reform if these centers are to remain competitive and effective in a changing health care delivery system, especially with managed care. Health care in teaching hospitals is more expensive than care in non-teaching hospitals, and payers assume only a portion of this increased cost. Thus, training programs are faced with addressing financial constraints while maintaining their missions of quality teaching, research, and clinical care.[38-40] Studies also indicate the need for health care training programs to be more diverse, more population-based, and more community-oriented, including the need to incorporate and reward community physicians as faculty members.[26, 41-42]

The events following September 11, 2001, have made imperative the creation of more structured and institutionalized collaborations between public health and primary care and have placed this agenda in the forefront of medical and dentistry training. Although collaborative models exist, few medical or dental programs have required all their students to obtain public health competencies or to gain experience in clinical practice with underserved communities and disadvantaged populations.[22] Further, few faculty have public health competencies or experience in providing health care to the underserved and the disadvantaged.[7] Nevertheless, existing models can provide important lessons for medical and dental programs seeking to prepare trainees to approach patients both as individuals and as members of a community and/or population group.

Summarized below are reports of lessons learned and best practices in collaborative efforts at the national, State, and/or community level and in medical and dental education:

King's Fund Symposium on Primary Care and Public Health

As Ros Levenson and Lucy Johnson observe, primary care providers "are generally committed to improving health in their communities, but they are having to cope with enormous workloads in their formative stages."[43] The 1999 King's Fund Symposium met to examine the relationship of primary care and public health, including the opportunities and problems in

developing proficiencies of primary care providers in promoting public health. At this Symposium, "a conviction [emerged] that it was not a huge step from looking at the health of a practice population to wider issues of public health across practices. However, this optimism was tempered with a sense of realism about the complexity of issues and the competing priorities for resource allocation."[44] The Symposium also discussed and recommended "the development of new and different partnership models through the public health research agenda . . . . [T]his should include work on the collaboration between primary care practitioners and others (including the lay community) within a social model, rather than a medical one."[45] The prospect of reframing the relationship of public health and primary care medicine on a social model entails some restructuring of the training of health professionals. The Symposium also agreed that "organizational support is essential for the effective implementation of new roles and responsibilities in primary care."[46]

Medicine/Public Health Initiative

The American Medical Association (AMA) supports the integration of public health and medicine and has a section on clinical and public health practice and outcomes and a Public/Private Partnership Subcommittee that seeks to encourage collaborative partnerships among academic medical centers, schools of public health, and medical schools.[47] In fact, the alliance of the AMA and the American Public Health Association (APHA) illustrates perhaps one of the best examples of a collaboration of public health and medicine. Since 1994, both have been involved in the Medicine and Public Health Initiative (MPHI), which "is devoted to the joining of Medicine and Public Health, the fields that focus respectively on individuals' and population health, in a search to explicate problems and produce innovative solutions to deal with the health needs of the people of the United States."[48]

The MPHI has seven major goals, excerpted below:

- Engaging the community
- Changing the education process
- Creating joint research efforts
- Developing a shared view of health and illness
- Working together in health care provision
- Jointly developing health care assessment measures
- Creating networks to translate Initiative ideas into actions.[48]

Comprised of 55 member organizations that include public health and medical associations and leaders in the public and private sectors, the MPHI uses small grants to encourage collaborations of public health and medicine.[18]

Cooperative Actions for Health Program

Linked to the MPHI are the Cooperative Actions for Health Program (CAHP), a grant-funded program sponsored by the AMA, the APHA, and the Robert Wood Johnson Foundation (RWJF). The monograph *Lessons Learned in Medicine and Public Health Collaboration* indicates that the purpose of the CAHP is "to build, support and strengthen collaboration between medicine and public health to improve the health of the public." The program provides grants for collaborative projects in medicine and public health, develops communications networks for information exchange, and identifies and collaborates on the health priorities of the AMA and APHA.[49]

In 1998-1999, the CAHP sponsored 19 site projects that provided three key lessons learned: physicians need to increase their knowledge about public health, professionals working in public health need to know more about the challenges facing physicians practicing medicine, and strategies and support are needed to sustain collaborations between public health and medicine.[50]

The New York Academy of Medicine evaluated the CAHP and recommended the following guidelines for both public health and medicine to pursue to help establish an effective alliance between them:

- "Promote the adoption of organizational policies to support ongoing relationships" among public health affiliates (PHAs) and medical societies (MSs) and among these organizations and community public health agencies.
- "Reduce the current 'imbalance' between MSs and PHAs."
- "Provide training to staff/officers of PHAs and MSs in leading, managing and participating in medicine/public health/community collaborations."
- "Be patient—relationships take time to build!"[51]

Lessons Learned in Medicine and Public Health Collaboration also stresses that "as the U.S. health care system has developed, there have been few incentives for collaboration and interaction between medicine and public health."[52] Further, health care

systems have perhaps unconsciously created barriers to collaborative efforts. To transform these barriers into bridges, incentives are needed.[13, 18, 52] These motivators may include policy changes, innovative curricula and training for health care professionals, and collaborative assistance that increases proficiencies in primary care medicine and dentistry. Further, forming collaborations is only one part of the desired objective. These partnerships also need to be sustained.[51] Therefore, any collaborative initiative should consider long-term as well as short-term planning and outcomes.

Florida Medicine-Public Health Initiative

In addition to a national Medicine/Public Health Initiative, many States have a State-level Initiative. For example, the Florida Medicine-Public Health Initiative was begun when the Florida Medical Association received a grant from the RWJF. The Initiative conducted focus groups in four Florida regions and then convened a Florida Medicine-Public Health Summit attended by members of various stakeholders, including academicians, public and private health care providers, and State legislators. These delegates developed and supported a set of "Summit Priorities and Recommendations," summarized as follows:

- Encourage more collaboration of medicine and public health, both in communities and medical education.
- Provide communications and information to empower individuals to make decisions about their health.
- Promote increased access to health care through collaboration of medicine, public health, and the community.
- Develop medical and public health leadership to improve the health of Florida's populace.

In carrying out its objectives, the Florida Medicine-Public Health Initiative fosters collaborative efforts within the context of the State's economic, health, and legislative environments.[53]

Models of Medicine and Public Health Collaboration Project

Dr. Roz Lasker, in the monograph *Medicine and Public Health: The Power of Collaboration*, reports on public health and medicine collaborations identified through solicited requests for information about such collaborations from medical and public health associations, government officials, and participants in foundation-sponsored projects. Responses resulted in a database of 414 collaborations between medicine and public health entities and/or other community organizations. Upon analysis of this database, the collaborations were organized and categorized according to six different "synergies" that illustrate a variety of innovative approaches to medical/public health collaborations.[54]

The monograph and an electronic version of the *Pocket Guide to Cases of Medicine and Public Health Collaboration* describe these six synergies:

- "Improving health care by coordinating medical care with individual-level support services"
- "Improving access to care by establishing frameworks to provide care for the un- or underinsured"
- "Improving the quality and cost-effectiveness of care by applying a population perspective to medical practice"
- "Using clinical practice to identify and address community health problems"
- "Strengthening health promotion and health protection by mobilizing community campaigns"
- "Shaping the future direction of the health system by collaborating around health system policy, health professions training, and health-related research."[55-56]

The sixth synergy includes models of collaborative efforts in training, education, and research in the health care professions. These models include the following kinds of collaborations in medical education and training:

- Incorporation of "a cross-sectoral perspective . . . in the curriculum of health professions degree programs"
- Establishment of dual-degree programs, such as those providing MD/MPH degrees
- Establishment of formal ties between programs of medical and public health education
- Establishment of connections between "medical and public health practice sites and/or other organizations in the broader community"
- Provision of "cross-sectoral education or training" to practicing health professionals
- Creation of "opportunities . . . for cross-sectoral networking, such as collaborative conferencing . . . ."[56]

Lasker notes that "while students, residents and faculty in health professions institutions participate in many collaborations . . , only a portion of these cases bring the two health sectors together for the explicit purpose of improving education and training. Nevertheless, almost 100 collaborations fall into this category . . . ." She adds that most of these collaborations involve medical students and that the extent of these collaborations varies considerably. Some programs offer students options to become involved in community-based service, to take elective public health-oriented courses, or to do rotations that provide public health exposure to students. Other programs "incorporate a broad perspective in the school's mission or structure, instituting courses, rotations, or practica that are required of all students."[22] Programs that integrate public health into their curricula prescribe a set of competencies for all students and indicate their commitment to a medicine/ public health alliance.

Roadmaps to Clinical Practice

Recognizing the critical need for partnerships between health care practitioners and public health professionals, the AMA and the U.S. Department of Health and Human Services have collaborated to create a series of monographs for physicians and other health care providers. The series, entitled *Roadmaps to Clinical Practice*, provides practical guidance to medical practitioners for incorporating disease prevention and health promotion into their medical care.[57] The first monograph in the series, entitled *Primer on Population-Based Medicine*, suggests that improvements in the Nation's health can be achieved "through prevention activities in the physician's office and the community." It adds, "A population-based perspective, whether considered at the medical practice or community level, is especially helpful when addressing chronic disease management . . . . Physicians need to identify and address factors in the patient's family and community that contribute to enhance their patient's primary care treatment."[58] The monographs address the need to maximize delivery of services.[57]

Medical Schools Objectives Project

Although health professions training programs are beginning to incorporate preventive medicine into their curricula, a survey conducted by the Association of Teachers of Preventive Medicine and the Health Resources and Services Administration (HRSA) revealed many gaps, especially in population-based health.[59] In 1997, these organizations convened a task force of medical educators to help plan desired educational components needed to foster the knowledge and, more importantly, the application of preventive medicine in health professions students and residents. This task force recommended strategies for medical schools to add or enhance prevention in their curricula, to encourage proficiency of students in preventive medicine, and to ensure training and development of faculty in preventive medicine. This group also composed a list of 12 core competencies or minimum expected outcomes in prevention for undergraduate medical education. These core competencies include clinical prevention training as well as quantitative skills. The Association of American Medical Colleges recommends that students of all medical schools know how to apply prevention strategies in their practices.[60] These recommended competencies provide a basis for consistent prevention training for all students in health professions.

Turning Point

Turning Point is a national initiative that seeks to build and alter the public health infrastructure. It is "founded on the idea that diverse groups working together can better identify and influence the determinants of health."[61] Created by the W. K. Kellogg Foundation (WKKF) and the RWJF, Turning Point works at the community level, "building broad community support and participation in public health priority-setting and action."[62] The partnerships fostered by Turning Point's activities have helped maximize the resources of the constituents involved. According to *What Turning Point Tells Us: Implications for National Policy*, "Turning Point's small financial investment in community partnerships generated a big return." Further, "Partnerships expanded participation in and ownership of public health and broadened the very definition of public health, as reflected in more in-depth assessments of community needs and health, increased capacity, and policy and organizational change in Turning Point communities."[63] The uniqueness of Turning Point's contributions to public health indicates the potential benefits of collaboration in communities using interdisciplinary approaches and gaining grassroots support for a public health agenda.

In 2001, in Washington, D.C., the Turning Point Forum convened constituents who had been awarded grants to rural, urban, and tribal communities in 14 States. At that meeting, Barbara Sabol, Turning Point program director for the WKKF, stressed the increasing importance of building public health capacity in our health care system: "The principle that everybody

has a stake in public health is now well established and will affect public health and policies in the future."[64] Although Sabol assumes a vast acknowledgement of the importance of public health, the gaps in our public health infrastructure and in the lack of adequate public health training in medical and dental education suggest otherwise. The construction of public health capacity must be strategic and sustained.

The Turning Point community partnerships exemplify best practices that can be used as role models for the Nation. One such example is Cheryl Boyce's story of the origins of the Ohio Commission of Minority Health. As the head of a State task force on Minority Health, she was asked in 1986 to determine the reason for health disparities between Ohio's minority and majority populations. When she failed to discover the answers in quantitative statistics, she used qualitative methods and asked 2,000 local citizens "about their community problems and solutions." She discovered "ineffective programs, fragmented health care and money allocated without assessing public health needs." As a result of her findings, Ohio shifted its focus from treatment to prevention of disease and formed the Ohio Commission on Minority Health, which "exists to institutionalize culturally appropriate health promotion and disease prevention programs."[65] Boyce's experience reveals the importance of including individuals and organizations in local communities as stakeholders in collaborative efforts between public health and primary care medicine and dentistry.

Best Practices in Dental Education

Numerous barriers to dental health care exist. In fact, *Oral Health in America: A Report of the Surgeon General* indicates the extent of gaps in access to dental care, especially among those who have little or no dental insurance.[66] To overcome barriers in dental health care, dental schools need "to provide an educational experience that exposes students to a wide array of clinical experience while expanding access to care for underserved populations."[67] These experiences prepare students to be more culturally sensitive and increase the likelihood that they will later work with vulnerable populations or underserved communities.

The report *Best Practices in Dental Education 2001* notes, "eliminating the marked oral health disparities present in many populations will necessitate the combined efforts of academic institutions and community-based organizations."[67] This report summarizes the challenges faced by schools of dentistry as they prepare their students to enter practice. These challenges include "expectations of the parent institution and the practicing community, meeting the needs of the underserved, utilizing information technology most effectively, and ensuring adequate numbers of qualified faculty to meet the teaching, research, and service mission of the dental school . . . ."[68] Despite these challenges, a number of dental programs have incorporated public health into their mission and into the training of their students.

For example, the Boston University School of Dental Medicine illustrates the integration of community-based education into the dental curriculum. Students receive instruction in communications and ethics along with their dental training. During their Applied Professional Experience, they are paired with practicing dentists who serve as mentors while students gain clinical practice as their mentors' dental assistants. As the students acquire clinical knowledge, they begin to provide dental care in community clinics. They may serve in sites providing dental care to underserved populations, including community health centers, hospital dental clinics, or school-based clinics. The program is deemed successful because of a committed network of faculty members based in the communities. The program's positive outcomes include exposing dental students to patients in underserved areas, increasing the number of students who later practice in underserved areas, and promoting research in dentistry.[67]

Another exemplary dental program with public health in its mission is the University of Connecticut School of Dentistry, which is the major provider of dental care for children eligible for Medicaid in Connecticut. The school also serves Medicaid-eligible adults, children enrolled in Headstart programs, and handicapped adults in central Connecticut. This program reports an annual 50,000 visits for all dental patients served by the School in its clinics.[69]

Other dental programs, such as those at the Louisiana State University Health Sciences Center School of Dentistry, the Medical University of South Carolina College of Dental Medicine, and the University of Iowa School of Dentistry, provide community-based care through mobile dental clinics. These mobile units attempt to overcome access barriers to dental care and are extremely successful. Louisiana State University's Tooth Bus, for example, was booked two months in advance after operating for only six months.[70] The American Dental Association awarded the University of Iowa's Geriatric Mobile Unit its prestigious Geriatric Oral Health Care Award in 1999. This program also won an award the following year from the University

of Iowa Council on Disability Awareness.[71] The Mobile Dental Outreach program at the University of South Carolina reports the following goals: "sensitizing dental students to oral health care needs and concerns of people in an underserved community setting, improving access to dental care to multiple populations, serving as a visible recruitment tool for minority students, and involving the college with health programs in an interdisciplinary setting."[72] Recognizing that best practices in dental education include public health practices, these outreach units provide applied clinical training for students and residents.

The University of Florida (UF) College of Dentistry has been involved in community service-based training since 1977, when it began a rural clinic affiliated with the local health department in Mayo, Florida. In the early 1990s, with the development of general dentistry residency programs in Jacksonville and St. Petersburg, the College of Dentistry began providing dental care to these communities from clinics owned and operated by the College. In 1995, with the creation of the University of Florida Statewide Network for Community Oral Health, the College expanded opportunities for resident training and increased access to Florida's underserved population.

The Network is a collaboration of the UF College of Dentistry, the Florida Dental Association, and community-based affiliates and health care organizations that provide education and/or health care to underserved populations. In addition to operating three college-owned facilities, the Network provides extensive dental care through various affiliates across the State, including community health centers, county public health departments, homeless shelters, and hospitals. Both residents and predoctoral students work in 12 sites, and the College is negotiating with additional sites that would increase access to dental care for underserved communities. Funding for the Network is derived from various sources: Title VII, section 747 grants; general college revenues from the State; the Florida Department of Health; statewide Area Heath Education Centers; and donations. The State Department of Health funding comes directly from the State's dental public health arm and links the College's programs with the State's public health infrastructure.

Responding to research that links low birthweight babies with untreated periodontal disease in pregnant women, the College's newest venture, funded by the State Department of Health, is in Gadsen County, a rural community just northwest of the State capital, Tallahassee. This county has the highest incidence of low birthweight/preterm births in the State. One dentist and support staff provide dental care from a two-chair dental clinic in a local community health center there. State funding will be used to develop proper infrastructure to support the development of long-term dental care in the community.[73]

Policy Academy for State Officials on Improving Oral Health Care for Children

The National Governors' Association (NGA), in recognition of the importance of dental health and the numerous barriers to accessing quality dental health care, authorized the Center for Best Practices to implement the Policy Academy for State Officials on Improving Oral Health Care in Children. The first Academy, initiated in 2000 and involving eight States, was so successful that two more Academies have been held, with a total of 23 States participating. The Academy brings together teams of individuals and organizations having an interest in and the capacity to address access to dental health care within a State.[74]

An example of State involvement in the Academy is Florida's initiative to increase access to dental care for its children, in which the University of Florida's College of Dentistry participates. Florida's approach illustrates a typical State response to the problem of access to dental care. Key participants in Florida included the public health sector, represented by public health dentists employed by the State Department of Health and local county health departments, and the primary care community, represented by dental members of the Florida Dental Association and dental hygienist members of the Florida Dental Hygiene Association. In addition, the Florida team included educators from the State's two dental schools, policymakers from both State government and academia, a representative from the State community health centers, and, most importantly, key elected officials from State legislative committees addressing health care, public health funding, and public health policy.

To participate in the Academy, a State has to apply and demonstrate the commitment of the Governor and other stakeholders to find solutions to its dental health problems. Florida submitted a plan with a "vision of the state of Florida to improve the oral health of children." Following Florida's acceptance and preliminary work, the NGA hosted a retreat with team members from several States in addition to a group of outside consultants who had expertise in developing and implementing Statewide dental health plans. The NGA experts also provided post-retreat advice and consultation.

Prior to and following the retreat, the Florida team met several times to develop a long-term strategic plan and subsequent action steps to improve oral health among the State's children. The plan's goals illustrate the comprehensive nature of this approach and the value of developing such an inclusive team. Assessment, access, education, and support are all included in the State's four-prong plan:

1. Implement a Statewide oral health surveillance system.
2. Increase access to oral health care.
3. Increase community- and school-based preventive and education programs.
4. Increase community and governmental awareness and support.[75]

Best Practices in Physician Assistant Programs

A number of physician assistant training programs emphasize community- and population-based training and interface with public health through their clinical practices. The programs described below receive Title VII, section 747 funding and illustrate the public health strides that can be made with that support.

The physician assistant program at Stanford University serves California's unique and diverse communities through recruitment and clinical placements. Having a goal of returning graduates to their communities when training is completed, Stanford's program actively recruits and trains students from medically underserved communities. Based on the principle that students should be trained with the populations they will serve when they graduate, Stanford's physician assistant trainees are assigned exclusively to community-based clinical rotations. Many of these clinics serve non-English-speaking, high-risk patients. California is home to more than one third of all U.S. legal permanent residents (recent immigrants and those eligible for naturalization) and to large Latino and Asian populations that frequently lack access to health care, have limited English proficiency, and experience high rates of poverty and unemployment. To increase access to health care, Stanford's physician assistant program utilizes Title VII, section 747 funds to support clinical placements in which students provide care for refugees, migrant workers, rural residents, and Native Americans.[76]

At the University of Colorado, all physician assistant trainees serve in clinical rotations with medically underserved populations. Students also have an option to take a rural track, which requires a four-month block rotation in a rural setting. One quarter of the program's students elect to take this track, and 60 percent of students in this track practice in a rural area upon their graduation. The program has developed innovative curricula to meet needs of rural populations and has won a Colorado Commission Award of Excellence.[77]

The University of Kentucky's physician assistant program also emphasizes rural health care, especially for rural HIV patients. In addition to training its students, this program provides training on rural HIV issues for practicing physician assistants nationwide through teleconferencing. The program has also developed a CD-ROM containing the didactic portion of the rural HIV health care training. Through innovative technology, this program has extended public health practice by training hundreds of health professionals, including physicians and dentists, on HIV issues for rural patients.[78]

The University of Washington's MEDEX Northwest physician assistant program serves the states of Washington, Wyoming, Alaska, Montana, and Idaho. To recruit students from rural communities and urban underserved clinics and to meet the needs of place-bound older students, the MEDEX program offers didactic training in three communities: Seattle—an urban community; Yakima,Washington—a rural community; and Spokane, Washington—a regional center of small towns. Clinical placements are located throughout the five-state region and include community health centers, Native American reservations, and Federally designated rural health clinics. About 40 percent of the graduates of MEDEX practice in medically underserved areas.[76]

Among the youngest of the Nation's physician assistant programs is that of the University of New Mexico. This program has already made great strides to advance a public health agenda in the State. Many of New Mexico's largely rural population lack health care access. This program has as its mission service to the State's rural and underserved populations. The first graduating class of eight students all serve these populations. Clinical rotations involve both rural and urban training, but students often work in areas lacking basic health care facilities. States one program representative, "One of our clinics has a PA [physician assistant] who has to row across a river to get to the tiny town she works in. Another has a PA who is not only the only health care practitioner, but is also

everything else—the ambulance driver, the EMT [Emergency Medical Technician] . . . ."[79]

Clearly, physician assistant programs play an increasingly important role in providing access to health care and extending public health practice.

CONCLUSIONS

Title VII, section 747 should continue its pursuit of desired health outcomes for the Nation and its support for training the Nation's primary health care workforce. Because access to health care is a critical public health function, expansion of core Title VII, section 747 funding is needed to fulfill the purposes of the program: to enhance the availability of a well trained primary care medical and dental workforce, to provide health care for vulnerable populations and underserved communities, and to promote and ensure diversity among primary care physicians, physician assistants, and dentists.

Further, educational initiatives among students and clinicians in the health professions are needed to increase public health knowledge and skills and to facilitate collaboration with the public health workforce. The recent bioterrorism events have made more apparent than ever before the increasing need for public health and primary care medicine and dentistry to work closely together to prepare for health emergencies. In fact, this event is the culmination of a series of factors indicating that medical care should focus more of its efforts on preventive, community-based, and population-based medicine. Issues such as increasing costs of health care, shifts in health care delivery, an increasingly aging and culturally diverse population, and unforeseen health events such as bioterrorism, emerging infections, and drug-resistant infections all converge to make the collaboration of medicine and public health not just desirable, but necessary.

The training and education of medical providers and dentists help establish discipline-specific core competencies, ideologies, and practice patterns. Consequently, by supporting the incorporation of public health competencies in the classroom and in clinical applications, Title VII, section 747 can help achieve a closer alliance of public health and primary care medicine and dentistry.

Collaborative models exist, although few medical or dental programs have required all their students to attain public health competencies or to gain experience in clinical practice in underserved communities and among disadvantaged populations. Nevertheless, models can provide important lessons for medical and dental programs seeking to prepare their students to approach patients both as individuals and as members of a community or population group.

The importance of Title VII, section 747 in achieving the immediate and long-term objectives of an alliance of public health and primary care medicine and dentistry cannot be underestimated. The Advisory Committee recommends that Title VII, section 747 be funded to sustain the increased access and diversity that it has already accomplished. Further, because health care providers need adequate preparation to fulfill their critical role in addressing public health emergencies, Title VII, section 747 should be used to incorporate public health competencies in the training of primary care providers and dentists. This educational emphasis on prevention and public health skills and clinical applications for medical and dental students and residents will also have the added dividend of extending life and the quality of life by reducing preventable illnesses, disabilities, and other adverse health outcomes.

Meeting the growing challenges that face primary care education without undermining the effectiveness of current programs requires an annual appropriation of $198 million, as indicated in the 2001 report of the Advisory Committee.[2]

RECOMMENDATIONS

I. **To avoid undermining the effectiveness of current programs, Title VII, section 747 requires continued support and additional funding.** Title VII, section 747 has been instrumental in creating a diverse, broadly competent primary care medicine and dentistry workforce for the Nation. Expansion of core Title VII, section 747 funding is needed to fulfill its purposes: to train a supply of primary care physicians, physician assistants, and dentists to provide health care to American communities, especially to disadvantaged populations and underserved communities that might lack access otherwise, and to promote diversity among primary care medical and dental providers.

Title VII, section 747 has had dramatic impacts on primary care medical and dental training and on the health care providers who graduate from programs awarded Title VII, section 747 funding. Medical and dental training programs funded by Title VII, section 747 have developed innovative

curricula in HIV/AIDS, geriatrics, managed care, domestic violence, genetics, culturally competent care, and rural health.[3] Family medicine, general internal medicine, general pediatrics, physician assistant, and general and pediatric dentistry programs have developed and expanded due to Title VII, section 747 support. Title VII, section 747 has also helped increase primary care research, which makes primary care medicine a more attractive career option for residents and improves the quality of primary care among patients.[3]

Primary care medicine, physician assistant, and dentistry programs supported by Title VII, section 747 have emphasized service of their graduates in medically underserved communities and among disadvantaged populations. In 1998, 42-56 percent of graduates of these programs entered practice in underserved communities, compared to a mean of 10 percent of U.S. health professions graduates overall. Further, data for 1998 indicate that 35-50 percent of graduates of programs supported by Title VII, section 747 represented minority or disadvantaged groups, compared to a 10 percent minority representation among the U.S. health professions workforce overall.[1] Evidence indicates that these graduates are five times more likely to practice among underserved communities and disadvantaged populations.[6] Continued institutional and fiscal support is needed to sustain these achievements of increased health care access and increased proportions of minorities in the health professions.

II. **TRAINING AND EDUCATION TO DEVELOP ESSENTIAL PUBLIC HEALTH COMPETENCIES SHOULD BE ENCOURAGED FOR ALL PRIMARY CARE MEDICINE, DENTISTRY, AND PHYSICIAN ASSISTANT PROGRAMS SUPPORTED BY TITLE VII, SECTION 747.** To prepare a health care workforce to respond more effectively to ongoing public health concerns and public health emergencies, public health training needs to become a part of primary care medicine, physician assistant, and dentistry education. To facilitate development of these competencies, programs should initiate the following activities:

A. ***Define minimal competencies needed for providers to respond to population-based health concerns, including bioterrorism; design curricula to develop these competencies; and establish procedures for assessing these competencies in trainees.*** To help guide programs, a list of “Core Competencies in Disease Prevention and Health Promotion for Undergraduate Medical Education” has been established by the Medical School Objectives Project, convened by the Association of American Medical Colleges.[24] Similarly, the American Dental Education Association has developed a list of core competencies that incorporates community-based health education and promotion competencies needed by dentists entering practice.[25]

B. ***Develop educational modules to help train primary care physicians, physician assistants, and dentists to respond to public health concerns, including bioterrorism and other emerging health problems.*** Educational modules and simulations are important tools for applied learning and dissemination of increasingly complex subject content. To prepare students for events that can only be anticipated, such methods create virtual approximations of actual events.

C. ***Encourage collaboration of Federally funded programs training public health professionals and Title VII, section 747-funded programs training primary care medical and dental providers.*** Interdisciplinary efforts that cross traditional program boundaries are important for creating needed bridges between public health and primary care. Such collaborations serve as models and maximize effectiveness of public funds.

D. ***Encourage research between public health faculty and medical and dental faculty to facilitate collaborative practices in primary care medicine and dentistry.*** Cross-disciplinary collaborations model and facilitate alliances between public health and primary care and illustrate interdisciplinary teams, synergies, and best use of joint resources.

E. ***Create leadership training courses that focus on developing alliances between public health and primary care medicine and dentistry.*** Leadership is requisite for facilitating change within training programs and communities. Faculty and

trainees skilled in facilitating and leading alliances between public health and primary care medicine and dentistry are needed to ensure successful collaborations.

F. ***Develop incentives for recruitment, development, and support of faculty who have training and experience in public health and who have provided health care to underserved communities and disadvantaged populations.*** Public health-oriented faculty are needed to serve as role models for trainees and to develop curricula that utilize their expertise and experience, yet studies indicate various difficulties involved in recruiting and retaining clinician-educators.[26-27]

G. ***Encourage faculty development programs that link primary care medical and dental faculty with the public health community.*** Lifelong learning and institutional support for faculty are considered important characteristics of quality medical education programs.[28] To develop faculty who have public health competencies and who can model those competencies for trainees, faculty development should include opportunities for community-based and population-based practice.

H. ***Ensure that public health training for primary care physicians, physician assistants, and dentists is both didactic (classroom based) and experiential (applied).*** Educational methods instilling public health competencies need to be both classroom based and field based. Students learn by observing and doing, not just by hearing. Faculty development should also include both classroom and field experiences to enhance faculty's public health knowledge.

I. ***Encourage accrediting bodies to develop measures that ensure up-to-date public health training for all levels of learners (i.e., students, residents, faculty, and community-based practitioners).*** Few incentives currently exist to encourage primary care medical and dental education programs to incorporate public health into their curricula. However, policies can offer those incentives.[7] Requiring public health competencies for program accreditation would compel medical and dental programs to implement coursework and clinical requirements into their training.

J. ***Encourage collaborations with programs funded by sources other than Title VII, section 747.*** Many programs that fall outside the purview of Title VII, section 747 are involved in public health at some level, including social work and legal professions programs. Title VII, section 747 programs should seek collaborations with these programs, some of which provide models of interdisciplinary efforts, such as those achieved in preventive medicine residencies and bioinformatics programs.

III. **ALL PRIMARY CARE PHYSICIANS, DENTISTS, AND PHYSICIAN ASSISTANTS SHOULD BE EDUCATED AND TRAINED IN KNOWLEDGE MANAGEMENT USING INFORMATION TECHNOLOGY TO ACCESS AND COMMUNICATE INFORMATION ABOUT PUBLIC HEALTH ISSUES.** As more information becomes available on the Web, primary care providers and dentists need to be able to access and use this information. Information technology systems enhance surveillance, coordination of patient care, and management of emerging public health issues within communities. They can be used to track patients, maintain disease registries, and electronically submit reports of reportable illnesses. Further, the Internet and e-mail are ideal for communicating and disseminating information.

IV. **EXAMPLES OF TITLE VII, SECTION 747 PROGRAMS THAT SUCCESSFULLY TRAIN PROVIDERS WITH BROAD PUBLIC HEALTH COMPETENCIES SHOULD BE WIDELY DISSEMINATED TO COMMUNITIES OF INTEREST.** The Health Resources and Services Administration should identify and disseminate information about programs that successfully produce trainees demonstrating strong public health competencies. Model training programs having successful public health outcomes illustrate what approaches work best and what problems must be overcome.

REFERENCES

[1] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive review and recommendations: Title VII, section 747 of the Public Health Service Act. Report to Secretary of the U.S. Department of Health and Human Services and Congress. Washington, DC; 2001: 4.

[2] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive review and recommendations: 7, 24.

[3] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive review and recommendations: 3.

[4] United States. Department of Health and Human Services. Healthy people 2010. Vol. 2: 23-26.

[5] Association of American Medical Colleges. Discussion Document: Review of the definition of "underrepresented minorities." 2002: 2.

[6] United States. Department of Health and Human Resources. Health Resources and Services Administration. Bureau of Health Professions. Fact sheet—health care access: it all starts with quality professionals. July 2000.

[7] Lurie, N. Strategies to address acute and chronic public health issues through primary care providers. Washington, DC: Meeting of the Advisory Committee on Training in Primary Care Medicine and Dentistry; May 13, 2002.

[8] United States. Department of Health and Human Services. Healthy people 2010. Access to quality health services. Retrieved April 20, 2002, from URL: *http://www.health.gov/healthypeople/document/html/volume1/01access.html*

[9] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive review and recommendations: 2.

[10] Satcher, D. Healthy people 2010: The partnership between public health and medicine. Washington, D.C.: Meeting of the Advisory Committee on Training in Primary Care Medicine and Dentistry; May 13, 2002.

[11] Workgroup on fostering the delivery of primary care and public health services through interdisciplinary teams. Washington, D.C.: Meeting of the Advisory Committee on Training in Primary Care Medicine and Dentistry; May 14, 2002.

[12] Public health and primary care: partners for health. A report for the Southeast Ontario DHC [District Health Council]; December 2000: section 1.

[13] Campos-Outcalt, D. The challenge of reforming education to improve access to unified interdisciplinary public health services for people in underserved rural and urban communities. Washington, D.C.: Meeting of the Advisory Committee on Training in Primary Care Medicine and Dentistry; May 13, 2002.

[14] United States. Department of Health and Human Services. Centers for Medicare & Medicaid Services. National Health Expenditures tables. Retrieved August 23, 2002, from URL: *http://www.cms.hhs.gov/statistics/nhe/historical/t1.asp*

[15] Garrett, L. Betrayal of trust. Washington, DC: Meeting of the Advisory Committee on Training in Primary Care Medicine and Dentistry; May 13, 2002.

[16] Lasker, R. Medicine and public health: the power of collaboration. New York: The New York Academy of Medicine; 1997.

17 Peters KE, Drabant B, Elster AB, Tierney M, Hatcher B, editors. Cooperative Actions for Health Program: lessons learned in medicine and public health collaboration. Chicago, IL: American Medical Association and Washington, DC: American Public Health Association; 2001.

18 Robert Wood Johnson Foundation. Grants results report. Local partnerships: the Medicine/Public Health Initiative. November 2001. Retrieved April 18, 2002 from URL: *http://www.rwjf.org/app/rw_grant_results_reports/rw_grr/028650.html*

19 Pomrehn PR, Davis MV, Chen DW, Barker W. Prevention for the 21st century: setting the context through undergraduate medical education. Academic Medicine 2000; 75(7 Suppl).

20 Bella MA. Turning Point: Collaborating for a new century in public health. A report on the last Turning Point forum. Battle Creek, MI: W.K.Kellogg Foundation and Washington, DC: The National Association of County and City Health Officials; 2001.

21 American Dental Education Association. Best practices in dental education 2001. Washington, DC: American Dental Education Association; 2001.

22 Lasker: 129.

23 United States. Department of Health and Human Services. Healthy people 2010. Healthy people 2010 goals. Retrieved April 20, 2002, from URL: *http://www.health.gov/healthypeople/dcument/html/uih/uih_bw/uih_2.htm#goals*

24 Pomrehn, Davis, Chen, Barker: S11.

25 American Dental Education Association. Competencies for the new dentist. Retrieved July 18, 2002, from URL: *http://www.adea.org/../DEPR/Competencies.html*

26 Levinson W, Rubenstein A. Integrating clinician-educators into academic medical centers: challenges and potential solutions. Academic Medicine 2000; 75(9): 906-12.

27 Barzansky B, Etzel S. Educational programs in US medical schools, 2000-2001. JAMA 2001; 286:1049-1055.

28 Klessing JM, Wolfsthal SD, Levine MA, Stickley W, Bing-You RG, Lansdale TF, et al. A pilot survey study to define quality in residency education. Academic Medicine 2000; 75(1): 71-73.

29 Fryer GE Jr, Meyers DS, Krol DM, Phillips RL, Green LA, Dovey SM, et al. The association of Title VII funding to departments of family medicine with choice of physician specialty and practice location. Family Medicine 2002; 34 (6): 436-40.

30 Politzer RM, Hardwick KS, Cultice JM, Bazell C. Eliminating primary care Health Professional Shortage Area: the impact of Title VII generalist physician education. Journal of Rural Health 1999; 15(1): 11-20.

31 Krist A, Johnson R, Callahan D, Woolf S, Marsland D. Relation of Title VII funding and physician practice in rural or impoverished areas. Unpublished. 2002.

32 American Dental Education Association. Strategic directions. March 2001. Retrieved July 18, 2002, from URL: *http://www.adea.org/Strategic_Directions.pdf*

33 American Dental Education Association. HRSA Oral Health Initiative. Retrieved July 18, 2002, from URL: *http://www.adea.org/../CPPA/Factsheets/oral_health_initiative.html*

34 United States. Department of Health and Human Services. Healthy people 2010. Public health infrastructure. Retrieved April 20, 2002, from URL: *http://www.health.gov/healthypeople/document/html/volume2/23phi.html*

35 Salinsky, E. Public health emergency preparedness: fundamentals of the “system.” NHPF Background Paper. National Health Policy Forum; April 3, 2002: 2.

36 Salinsky: 7-11.

37 Levenson R, Johnson L. Improving health at local level: the role of primary care. Background paper. King’s Fund Symposium Primary Care and Public Health; November 1999: 1.

38 Carey RM, Engelhard CL. Academic medicine meets managed care: a high-impact collision. Academic Medicine 1996; 71(8): 839-45.

39 Hueston, WJ, Mainous AG III, Bazell C, Connor MK. Challenges to academic family medicine in the current health care environment. Family Medicine 2000; 32(4): 240-245.

40 Eliastam, M. The need for a new model of care: revisiting the archetype. Physician Executive 1996; 22(6): 11-13.

[41] Levenson, D. Increase diversity, community service in health care schools, panel urges. AHA News. December 14, 1998; 34(46).

[42] Fisher, HM. Community service as an integral component of undergraduate medical education: Facilitating Student Involvement. Bulletin of the New York Academy of Medicine 1995; 72(1): 76-86.

[43] Levenson, Johnson: 2.

[44] Levenson, Johnson: 4.

[45] Levenson, Johnson: 10.

[46] Levenson, Johnson: 12.

[47] Robert Wood Johnson Foundation, AMA, & APHA. The Medicine/Public Health Initiative. Retrieved April 18, 2002, from URL: *http://www.sph.uth.tmc.edu/mph/new/mphimeeting_min.html*

[48] Robert Wood Johnson Foundation, AMA, & APHA. The Medicine/Public Health Initiative. Retrieved April 18, 2002, from URL: *http://www.sph.uth.tmc.edu/mph/purpose.html*

[49] Peters, Drabant, Elster, Tierney, Hatcher: 10.

[50] Peters, Drabant, Elster, Tierney, Hatcher: 11-12.

[51] Peters, Drabant, Elster, Tierney, Hatcher: 12.

[52] Peters, Drabant, Elster, Tierney, Hatcher: 13.

[53] Florida Medical Association and Florida Public Health Association. Florida Medicine-Public Health Initiative: final report. Retrieved April 23, 2002, from URL: *http://www.sph.uth.tmc.edu/mph/florida/florida.html*

[54] Lasker: 48, 50.

[55] Lasker: 51.

[56] The New York Academy of Medicine. Electronic pocket guide to cases of medicine & public health collaboration. 1998. Retrieved April 19, 2002, from URL: *http://www.nyam.org/publications/online/pocketguide/html/synergies.html*

[57] Medicine and public health: collaboration benefits everyone. Editorial. January 21, 2002. Amednews.com. Retrieved April 19, 2002 from URL: *http://www.ama-assn.org/sci-pubs/amnews/amn_02/edsa0121.html*

[58] Roadmaps for clinical practice: primer on population-based medicine. "Executive summary." Retrieved April 20, 2002, at URL: *http://www.ama-assn.org/ama/upload/mm/36/roadmapsexecsumm.pdf*

[59] Pomrehn, Davis, Chen, Barker: S6.

[60] Pomrehn, Davis, Chen, Barker: S7-S13.

[61] Baxter: 3.

[62] Baxter: 4.

[63] Baxter: 6.

[64] Bella: 2.

[65] Bella: 2-3.

[66] United States. Department of Health and Human Services. Oral health in America: a report of the Surgeon General—executive summary. Rockville, MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.

[67] American Dental Education Association: 8.

[68] American Dental Education Association: 2.

[69] American Dental Education Association: 14.

[70] American Dental Education Association: 12.

[71] American Dental Education Association: 15.

[72] American Dental Education Association: 13.

[73] Catalanotto, F. E-mail communication. August 5, 2002.

[74] National Governors Association. NGA selects eight states for Policy Academy on Oral Health Care for Children. NGA holds second Policy Academy on Oral Health Care for Children. Third NGA Policy Academy on Oral Health Care for Children to be held in Mississippi. Retrieved July 18, 2002, from URL: *http://www.nga.org/nga/newsRoom*

[75] Catalanotto, F. E-mail communication. July 2, 2002.

[76] Ballweg, R. E-mail communication. July 29, 2002.

[77] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive Review and Recommendations: 63.

[78] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive review and recommendations: 71.

[79] United States. Department of Health and Human Services. Health Resources and Services Administration. Advisory Committee on Training in Primary Care Medicine and Dentistry: Comprehensive review and recommendations: 84.

APPENDIX A: BIOGRAPHIES AND PRESENTATIONS OF SPEAKERS

JEFFREY DUNLAP .... Biography 29

HRSA Public Health and Bioterrorism Programs and Primary Care Clinicians (Summarized from transcript) 29

DAVID SATCHER .... Biography 33

Healthy People 2010: The Partnership Between Public Health and Medicine (Summarized from transcript) 34

LAURIE GARRETT .... Biography 41

Betrayal of Trust (Edited transcript) 42

DOUG CAMPOS-OUTCALT .... Biography 49

The Challenge of Reforming Education to Improve Access to Unified Interdisciplinary Public Health Services for Peoplein Underserved Rural and Urban Communities 49

DEBBIE WARD .... Biography 57

The Challenge of Reforming Education and Practice to Foster the Delivery of Primary Care and Public Health Services Through Interdisciplinary Teams (co-authored with Bobbie Berkowitz) 57

NICOLE LURIE .... Biography 63

Strategies to Address Acute and Chronic Public Health Issues Through Primary Care Providers 63

Jeffrey Dunlap, M.S.P.H.

HRSA Public Health and Bioterrorism Programs and Primary Care Clinicians

BIOGRAPHY

Jeffrey Dunlap has nearly 20 years of service dedicated to improving the public's health. He received his B.A. degree in political science and international relations from Syracuse University and his M.S. in public health from the University of North Carolina at Chapel Hill. While at Chapel Hill, Mr. Dunlap received a Public Health Service Traineeship and was recognized as a Chancellor's Scholar.

Upon completing his studies, Mr. Dunlap received an appointment as a Presidential management intern (PMI). During his tenure as a PMI, Mr. Dunlap enjoyed a variety of assignments with the Heath Care Finances Administration, U.S. Agency for International Development, and the Health Resources and Services Administration (HRSA), where he was assigned to the Public Health Service's Interagency Committee on Infant Mortality and the Secretary's Advisory Committee on Infant Mortality.

At HRSA, Mr. Dunlap has served as an analyst in the Maternal and Child Health Bureau's Healthy Start Initiative and also served in the Bureau of Primary Health Care's National Health Service Corps program. He also provided leadership to the Bureau of Primary Health Care's managed care technical assistance activities and served as a senior analyst in HRSA's Center for Public Health Practice.

As senior advisor to the Associate Administrator for Field Operations, Mr. Dunlap spearheaded reorganization efforts and led the Agency's Border Health Initiative. In September 2000, he was appointed Deputy Director, Division of Public and Allied Health with the Bureau of Health Professions, where he reengineered the Division into the Center for Public Health. In October 2001, Mr. Dunlap was appointed to lead the Bureau's new Division of State, Community, and Public Health, where he oversees a variety of interdisciplinary training programs.

Mr. Dunlap has been recognized with several awards, including the Administrator's Special Citation for Outstanding Performance on four occasions, twice individually and twice as a member of working groups. He was also selected by HRSA to serve as a Fellow to the Council of Excellence in Government and currently participates as a Senior Fellow. Mr. Dunlap received the Secretary's Award for Distinguished Service for his work on border health. He is currently a Fellow with the Public Health Institute.

HRSA PUBLIC HEALTH AND BIOTERRORISM PROGRAMS AND PRIMARY CARE CLINICIANS

(Summary from transcript)

by Jeffrey Dunlap

The Health Resources and Services Administration (HRSA) is seen as the "access agency" that seeks "to assure the availability of quality health care to low-income, uninsured, isolated, vulnerable, and special needs populations to meet their unique health care needs." The strategies for that assurance of health care include eliminating barriers to care, assuring quality of care, eliminating health disparities, improving public health, and improving health care systems. HRSA has a new Division of State, Community, and Public Health, which has as one of its charges the building of bridges between public health and primary care.

HRSA's Bureau of Health Professions seeks "to increase health care access by assuring a health professions workforce that meets the needs of the public." The Bureau uses selected strategies to accomplish this objective:

- Developing the health professions workforce through research, analysis, and planning
- Improving the distribution and diversity of health professionals to rural/urban underserved areas
- Improving the quality of health professions practice and education
- Focusing on key twenty-first century health professions issues, including geriatrics, genetics, diversity, distribution, and bioterrorism.

JEFFREY DUNLAP

HRSA Public Health and Bioterrorism Programs and Primary Care Clinicians (Transcript Summary)

HRSA's unique role carries over into emergency preparedness. In fact, HRSA's responses to today's public health challenges are agency-wide, not restricted just to the Division of State, Community, and Public Health or the Bureau of Health Professions. HRSA bureau programs actively participate and contribute to these efforts.

HRSA is involved in improving readiness for health emergencies and emerging health threats through a number of avenues: hospitals, clinical training, and existing networks. The agency assists hospitals to become better prepared through support of a hospital preparedness program, hospital emergency response, and hospital infrastructure, including laboratories and decontamination programs.

HRSA's Hospital Preparedness Program, which is headed by the Maternal and Child Health Bureau, works with States to assure that the Nation's hospitals have the equipment and training necessary to respond appropriately to bioterrorism and mass casualty incidences. The budget for FY 2002 is about $135 million. The program is also in the President's 2003 budget for $235 million.

HRSA's Hospital Emergency Response Program, which began soon after September 11, allocated $40 million to help compensate for hospitals' lost revenues directly attributable to terrorist attacks.

The Hospital Infrastructure Laboratory Decontamination Program, directed by HRSA's Office of Special Programs, helps provide adequate hospital lab capacity in the Nation by helping with hospital infection control and with the purchase of protection and decontamination equipment. The 2003 budget provides $283 million for this program.

In addition to bioterrorism, HRSA is involved in genetics as an emerging issue. Emerging issues are numerous, and many overlap and contribute to one another.

HRSA also has a new program called Educational Incentives for Curriculum Development and Training Program, headed by Neil Sampson and assisted by a task group from across the Bureau of Health Professions. This program offers educational incentives for curriculum development and training programs that emphasize recognizing, treating, and reporting of disease, including patterns of illness with unusual manifestations and symptoms. In 2003, this program has a budget of $60 million.

The interdisciplinary nature of the program demonstrates the approach we are taking with programs across the Bureau—"the need to bridge and work across all the divisions . . . , all the programs, and all the disciplines." The Division of State, Community, and Public Health is a "bridge division or the glue division. We try to put things together." The bioterrorism curriculum effort attempts to do just that.

The Educational Incentives for Curriculum Development and Training Program emphasizes "the development of a health care workforce that has the knowledge, skills, and abilities" to respond to bioterrorism events. The health care workforce should be prepared to "recognize the indications of a terrorist event in their patients," "treat their patients in a safe and appropriate manner," and "rapidly and effectively alert and engage the public health system in the event of such an emergency." This program bridges public health and primary care, makes needed linkages, and prepares health care providers to interface with the public health systems if emergencies due to terrorism should occur.

Further, HRSA's involvement in improving the readiness of the Nation's health care infrastructure utilizes existing networks such as Community Health Centers, Primary Care Organizations (PCOs), the National Health Service Corps, Public Health Training Centers, and Area Health Education Centers (AHECs). The network of about 700 Community Health Centers in about 2,300 sites serves approximately 12 million people. In a bioterrorism event, these Centers will be important because of the medical vulnerability of the populations they serve.

Around 50 PCOs exist and are housed in the Offices of the State Health Officers across the Nation. They are critical links between primary care and public health and also would play an important role in bioterrorism attacks. The National Health Service Corps is an additional important link for accessing public health systems in rural areas. Corps clinicians will also be trained to be "front and center" in case of bioterrorism emergencies. Similarly, about 40 new Commissioned Corps Officers are being prepared to be out in communities ready to respond to emergencies.

Currently, 14 Public Health Training Centers covering 42 States are funded across the country. This Training Center program is new, but will serve as an

infrastructure to help bridge primary care and public health. The Centers provide outreach and public health training to primary care clinicians and facilitate an interface between public health and primary care.

Also, 45 AHECs exist in 42 States and direct 170 community-based AHECs across the United States. These AHECs are central to the provision of continuing education and training needed for providers. Interdisciplinary approaches are stressed in these training programs that annually impact about 150,000 providers.

Although funds have not been appropriated for bioterrorism activities in the AHECs, they nevertheless are conducting various activities to enhance bioterrorism response and preparation. For example, the University of Connecticut AHEC has created a database of health care providers in the State. This database includes contact information, specialties, and skills in case providers need to be deployed in an emergency. Initiated in response to the Olympics, the Utah AHEC has developed an early detection system. North Carolina's AHEC does broad-based training that links with health systems in the State. In Northern Virginia, which has pockets of underserved populations largely due to language barriers, the AHEC worked with providers to help them address multicultural populations speaking diverse languages.

Much good curricula exist already. One of our tasks is to locate best practices and best models to use. Following up on the public services announcements that were available in different languages during the Florida Super Bowl, the Florida AHEC initiated special training for community health centers. The training, attended by 160 providers, addressed rural communities and the special needs of those populations.

Currently, a modular resource across four years of medical education is being produced that will assist family medicine and other medical school faculty in teaching preparedness in the event of bioterrorism. The Family Medicine Curriculum Resource Project is also developing a Web-based bioterrorism module to increase student competence across the four years of medical education.

In addition, the Ambulatory Pediatric Association has formed a regional subgroup on bioterrorism, and our AHEC programs are also forming workgroups. Keeping track of the numerous activities in the government is difficult, even across the Title VII programs, but we want to do this work to reduce duplication and access best practices.

The terrorist attacks of September 11 and the anthrax cases that followed challenge us to find ways to work together to meet the needs of our communities. HRSA believes its training infrastructure is critical in addressing those needs and in linking public health with clinical health.

David Satcher, M.D., Ph.D.

Healthy People 2010: The Partnership Between Public Health and Medicine

BIOGRAPHY

Dr. David Satcher completed his four-year term as the 16th Surgeon General of the United States in February 2002. He also served as Assistant Secretary for Health from February 1998 to January 2001, making him only the second person in history to have held both positions of Surgeon General and Assistant Secretary of Health simultaneously.

In January 2002, Dr. Satcher was named the director of the new National Center for Primary Care at the Morehouse School of Medicine in Atlanta, Georgia. He assumed the post in September 2002. Dr. Satcher is currently serving as a Senior Visiting Fellow with the Kaiser Family Foundation, where he is spending time reflecting and writing about his experiences in government and consulting on public health programs.

From 1993 to 1998, Dr. Satcher served as director of the Centers for Disease Control and Prevention and as Administrator of the Agency for Toxic Substances and Disease Registry. Before that time, he was president of Meharry Medical College in Nashville, Tennessee, from 1982 to 1993.

He was also professor and chairman of the Department of Community Medicine and Family Practice at Morehouse School of Medicine from 1979 to 1982, and he was on the faculty of the UCLA School of Medicine and Public Health and the King-Drew Medical Center in Los Angeles, where he developed and chaired the King-Drew Department of Family Medicine. From 1977 to 1979, he served as the interim dean of the Charles R. Drew Postgraduate Medical School. He also directed the King-Drew Sickle Cell Research Center for six years.

As Surgeon General and Assistant Secretary for Health, Dr. Satcher led the Department's effort to eliminate racial and ethnic disparities in health, an initiative incorporated as one of the two major goals of *Healthy People 2010*, the Nation's health agenda for the decade. He also released Surgeon General's reports on various public health issues: tobacco and health; mental health (followed by three supplements—children's mental health; health disparities and mental retardation; and culture, race, and ethnicity); suicide prevention (followed by a national strategy to prevent suicide); oral health; sexual health and responsible sexual behavior; youth violence prevention; and overweight and obesity.

Dr. Satcher is a former Robert Wood Johnson Clinical Scholar and Macy Faculty Fellow. He is the recipient of nearly two dozen honorary degrees and numerous distinguished honors, including top awards from the National Medical Association, the American Medical Association, the American College of Physicians, the American Academy of Family Physicians, the American Academy for the Advancement of Science, and *Ebony* magazine. In 2000, he received the Didi Hirsch "Erasing the Stigma" Mental Health Leadership Award and the National Association of Mental Illness Distinguished Service Award. In 1999, he received the Bennie Mays Trailblazer Award and the Jimmy and Rosalynn Carter Award for Humanitarian Contributions to the Health of Humankind from the National Foundation for Infectious Diseases. In 1997, he received the New York Academy of Medicine Lifetime Achievement Award.

Dr. Satcher graduated from Morehouse College in Atlanta in 1963 and is a member of Phi Beta Kappa. He received his M.D. and Ph.D. from Case Western Reserve University in 1970, with election to Alpha Omega Alpha Honor Society. He did residency/fellowship training at Strong Memorial Hospital, University of Rochester, UCLA, and King-Drew. He is a Fellow of the American Academy of Family Physicians, the American College of Preventive Medicine, and the American College of Physicians.

Dr. Satcher would most like to be known as the Surgeon General who listened to the American people and responded with effective programs. His mission is to make public health work for all groups in this Nation.

HEALTHY PEOPLE 2010: PARTNERSHIP BETWEEN PUBLIC HEALTH AND MEDICINE

(Summary from transcript)

by Dr. David Satcher

Listening to the proceedings thus far has led me to reflect on the years that I served on HRSA or HRSA staff advisory committees. In 1986, I was appointed to the Council on Graduate Medical Education and was appointed Chair when President Bush was elected. Service on the Council on Graduate Medical Education led me to be involved with the then current administration's health reform strategy, which resulted in my appointment as Director of the CDC and, later, Assistant Secretary for Health and Surgeon General.

I am pleased to be able to join you to discuss the issue of improving the public's health by enhancing the primary care/public health interface in the United States. When I served as Director of CDC and Dr. Lee Fielding was Assistant Secretary for Health and Donna Shalala was Secretary, we started a project with the American Medical Association and the American Public Health Association called Partnership Between Public Health and Medicine. The idea was to improve the partnership between public health and health care, an effort that still continues, although not vigorously.

At a meeting of deans in Chicago in 1996, Donna Shalala told a story that attempted to explain why this partnership is so important. She said public health and medicine are like two trains traveling on parallel tracks through a community. On one side, medicine looks out the window and sees patients with their various diseases in need of treatment. On the other side, public health looks out and sees populations and opportunities for health promotion and disease prevention. The only problem, of course, is that it is the same community. Public health and health care need to get on the same train. That analogy is truer today than it was then. The critical challenges we now face demand that public health and health care be on the same train as we work with communities throughout this country.

We want to be reminded of September 11th for two reasons: One is that September 11th and the subsequent anthrax attacks put into perspective the need for this partnership more than anything I have witnessed in recent years. What became very clear after September 11th was the weakness in the public health infrastructure.

I define the public health infrastructure as having at least three components. The first component is the public health service at the Federal, State, and local level. Many issues emerged after September 11th regarding the strengths and weaknesses of the Public Health Service and the communication or lack of it among the different levels.

The second component of the public health infrastructure is the people who provide care to populations on the front line. Physicians, dentists, pharmacists, nurses, and many others on the front line taking care of patients are a critical part of the public health infrastructure.

Just how critical this health care component is became very clear after September 11th to the extent that people on the front line were able to recognize unusual symptoms and unusual presentations of diseases. We were able to get on top of the anthrax attack very early. The people on the front line complained that they did not receive needed information from the Public Health Service in a sufficiently timely manner to be able to make diagnoses. Clearly, here was a situation in which these two segments needed to have been cooperating and training together for a bioterrorist attack.

At one time, we had satellite conferences all over the country. We reached about 400,000 to 500,000 clinicians in these satellite conferences. What would have happened if, when we were doing the so-called bioterrorism training, we had used the satellite conferences instead of having conferences that perhaps a total of 5,000 clinicians attended over a period of two or three years?

It became clear that we were not taking seriously the fact that the public health infrastructure that must respond to this kind of attack must be included in training. These two segments must be prepared, as well as one other component—the general public.

It became very clear after September 11th that, to the extent that the general public is prepared or unprepared for any kind of bioterrorist attack, we are able to respond. Anxiety prevails when the general public is unprepared.

It is hard to get cooperation from the public if they lack the information they need. The same people who may not be practicing good public health habits such

as thoroughly cooking meats and washing their hands are the citizens who are also the subjects of bioterrorism attacks.

These are the three components of the public health infrastructure: the public health service, the health care providers, and the general public. To the extent that we can strengthen the public health infrastructure by doing more at every level, including a lot more community education in local communities, we can strengthen the public health infrastructure.

Many of us feel that out of September 11th and the anthrax attacks ought to come a better appreciation for public health on the part of Congress, State legislatures, and local communities. If that appreciation occurs, it will be a very good thing.

I am going to talk about a national prescription for building the next generation of healthy people. That is what *Healthy People 2010* is all about, even though it is for a decade. The question is how do we promote the health of the American people using this planning strategy?

The Surgeon General's reports have played an important role in the Nation's health, including the one that gave rise to *Healthy People* and that was released by Julie Richmond in 1979—*Health Promotion and Disease Prevention*. As Assistant Secretary for Health, I think our major contribution to *Healthy People* was, in fact, the ten leading health indicators that had never before been a part of *Healthy People*. Incorporating these indicators was an attempt to say that, if we are to be successful with *Healthy People*, we have to have something that the American people can understand. You cannot communicate 467 objectives but you can communicate ten leading health indicators. One of the greatest opportunities someone has as Surgeon General is to use the credibility of that Office to develop reports and communicate directly with the American people.

The first Surgeon General's report was in 1964 from Dr. Luther Terry on smoking and health. When you think about the impact of that report and of the many Surgeon General's reports on smoking that have followed it, it is clear that the Surgeon General's Office has a tremendous opportunity to make a difference through this communication.

We continued the legacy of former Surgeon Generals in releasing three reports on smoking and health: *Racial and Ethnic Issues in Smoking and Health*, *Reducing Tobacco Use*, and *Women and Smoking*.

We also ventured into areas that had never been addressed before by a Surgeon General, especially in mental health, suicide prevention, and oral health. The response to those reports especially is amazing.

Healthy People is in its third decade, going back to 1979. It represents a tremendous opportunity because probably, there is no process like it in which we involve grassroots communities throughout this country and in which decisions about the priorities, goals, and objectives for *Healthy People* have input nationwide.

Some communities are well organized around *Healthy People*. These communities have their own objectives under the two goals put forward in *Healthy People 2010*. Community involvement in *Healthy People* is a tremendous process itself. I really enjoyed traveling over the country, visiting regions, and speaking to community groups about the *Healthy People* we developed.

It is a comprehensive set of national ten-year health objectives. It is indeed a very collaborative process. Perhaps the most important thing is that it is designed to measure progress over time, to be accountable, sometimes painfully so, in reporting on *Healthy People*.

I have had to report on it many times, and it is sometimes painful to report that you have made little progress. The beauty of accountability, however, is that, once you put yourself on the line and say, "this is what we plan to do, and this is where we plan to be five years from now, ten years from now," then you can be held accountable. The great thing as a Nation is that when we make these commitments, we can be held accountable.

I am not sure I know anybody who has read it, but in case you have not read it—the whole document—it is a public health document that is part strategic plan, part national health data report, and part textbook on public health priorities.

For the first time, we did a summary because we have two volumes of *Healthy People 2010*. They were so large that Donna Shalala, when I presented them to her, stood up on them so she could equal my height and make a point. Donna was good at making points. She was making the point about how much material is in *Healthy People 2010*.

We issued the summary, and we also issued the CD-ROM for the first time. In using the CD-ROM or going to the Internet, you can find and look at any area of *Healthy People 2010* in detail.

Healthy People 2000 had more than 300 objectives. For 2010, there were 467. I learned a lesson because I was committed to reducing the number of objectives. What I learned in that process is that whenever you bring on new areas like visual and hearing disorders, disability, public health infrastructure, or health communication, every area brings a set of objectives. Objectives also bring resources, so having a lot of objectives is not necessarily a bad thing, even though I thought that I was going to reduce them. Failing to do so led us to be very committed to the ten leading health indicators. The number of objectives has grown over the years since 1980 with *Healthy People 1990*, which had about 236 objectives, to the 467 objectives in *Healthy People 2010*.

This *Healthy People* had two goals that capture the major challenges we face in public health and health care over this decade. The American society is aging in the sense that the fastest growing group of people in this country consists of people over age 65. There are 35 million people over 65 years of age, and we project that, by 2030, 70 million people will be over 65 years of age.

There are four million cases of Alzheimer's today, and there will be more than 14 million by 2050 unless things change dramatically or unless we come up with an intervention that we have not yet found to curtail this problem. In 1976, only 500,000 cases of Alzheimer's had been diagnosed. By 2000, there were four million cases, and the number is growing at a very rapid rate as our society ages.

We decided that it was important to emphasize not only the years of life that people live, but also the quality of those years. Improving quality of life needs much work. If you think about how we deal with the older population in this country, we have a tendency to push people aside after they reach a certain age. That quality of life is not good for their health, and it is not good for public health, so we have to address that.

We have to address some of our values as a society. We have to focus on issues that bother people as they get old, including low back pain and depression. Because of our social situation especially, we see dramatic increases in depression and many other problems that are preventable in the elderly. We tried to make the point that these were not diseases of aging, but were problems occurring because of what we failed to do in terms of public health and health care.

The other point important to make here is that quality of life issues are not just about older people. Issues related to quality of life start with life itself, certainly *in utero*. Babies have experiences *in utero* from which they never recover in terms of quality of life. Whether exposure to poor nutrition, alcohol, or crack cocaine, *in utero* experiences can impact quality of life for the rest of life.

We also did a report on breastfeeding, which makes a great difference in quality of life, not only in childhood but throughout life. Every day, we learn more about the impact of breastfeeding on the health of people. Quality of life issues begin with life, and they continue throughout life.

The second goal for *Healthy People 2010* acknowledges that, as a Nation, we are becoming increasingly diverse. That diversity ought to be one of our major strengths, but we have to work at making diversity a strength more than we have in the past.

In 1997, President Clinton, in a California commencement address, talked about a race initiative to improve race relations. He asked every Department to find a strategy for enhancing race relations in this country. We had been struggling with priorities in our Department and having many debates. We decided to move toward a commitment to eliminate racial and ethnic disparities. It is a very bold commitment because, to achieve it, many drastic changes must take place.

A partnership between public health and primary care medicine and dentistry is a mandate if we are ever to achieve this goal. It has to happen. I would go further and say that universal care has to happen—universal access, universal coverage.

We are not going to achieve these goals unless those events occur. When you set bold goals, you set yourself up for failure, which is why some people do not want to set such goals. You must define what you have to do and why it is so important to do. These goals are in clear perspective.

In looking at the first goal, we must look at health across the years, which we have started to do. When you look at aging, it is like the World Health

DAVID SATCHER ***HEALTHY PEOPLE 2010: THE PARTNERSHIP BETWEEN PUBLIC HEALTH AND MEDICINE (TRANSCRIPT SUMMARY)***

Organization's definition of health: it is not merely the absence of disease, but the presence of complete physical, mental, and social well being. When we look at all people, we must view them that way. To what extent are we working to make sure that they have well being in all three of these areas?

We have made much progress in public health. In 1900, the overall life expectancy in this country was about 47. At the time, it was about 49 for whites and about 34 for African-Americans. By the year 2000, the life expectancy in this country had increased by 30 years, and we attribute most of that increase to public health and prevention. In 2000, the life expectancy for whites was approaching 79, and for African Americans, 72. On one hand, the gap narrowed from about 15 years to about seven years, but there was still a significant gap.

Events like improved sanitation, immunizations, and development of antibiotics had a major impact, especially on the health of children. When you have those kinds of interventions, the most vulnerable in our society benefit the most because they are suffering the most from lack of interventions. Poverty breeds infectious diseases and, therefore, people who live in poverty and who are able to get immunizations will certainly experience a tremendous boost in life expectancy.

That is why universal access is so critical for eliminating disparities because the people who suffer most from a lack of access are minorities and the poor, and they will benefit the most when we have it. Although everybody will benefit, the ones who will benefit the most are those who are most vulnerable because they are suffering the most.

We actually announced the initiative to reduce health disparities before *Healthy People 2010* was announced. We were responding to the request that every cabinet head should develop a strategy to support the race initiative. We had been talking about this goal for some time, and soon after I became Assistant Secretary for Health and the Surgeon General, we reported to the President that we wanted to make this commitment. He was very enthusiastic about it, and in April of 1998, he announced the initiative to eliminate disparities in health. We were then able to fold that goal into *Healthy People 2010*.

When we announced the initiative in 1998, we decided that we needed to focus on areas in which we had enough data that we could measure where we were, where we were going, and where we had the facility to make a difference. We identified six areas, including infant mortality, breast and cervical cancer, and cardiovascular disease. These areas are interesting because they differ from one another. Infant mortality is certainly different from cardiovascular disease, and all of them are different from immunization, which is a health service intervention. AIDS is the only infectious disease in the six areas, but it is perhaps the world's greatest pandemic. By 2020, it will have killed more people than any other disease in the history of infectious diseases.

We never intended to stop with this group of six areas that we initially came up with. When *Healthy People 2010* came out, we made it clear that areas like asthma would also be very important.

I delivered a commencement address Saturday at the University of Michigan School of Dentistry, a school of dentistry that is leading the way, along with several other dental schools, in programs to eliminate disparities in oral health.

The National Institute of Dental and Craniofacial Research at NIH has funded five centers for disparities research and oral health. The University of Michigan in conjunction with the City of Detroit has developed the major program to work toward eliminating disparities in oral health. The pervasiveness of the goal of eliminating disparities far beyond the six initial areas is important for *Healthy People 2010*.

The Institute of Medicine was asked to help put together a list of leading health indicators that would capture the essence of *Healthy People 2010*. They returned 12 to us, and Nicole Lurie chaired a steering committee that reduced them further to ten. We wanted the number to be small, no more than the number of fingers on our hands. We struggled with the decision to reduce them, but came up with ten leading health indicators.

These break down into health system indicators and lifestyle indicators, although injury, violence, and environmental quality arguably may fall into another category. Each of these ten leading health indicators has one or more measurable objectives associated with it. The indicators cover five health systems and five lifestyles. The health systems ones are interesting, and, obviously, access is the overriding one. If you stop with that one, you would cover most of the other indicators.

Access to quality mental health care is a major issue as Congress struggles today with parity of access to mental health services. To end discrimination in coverage of mental health services in this country is a major challenge that we face. Medicaid and Medicare both discriminate in terms of coverage for mental health services, so many issues are involved.

Several barriers are associated with access. The oral health report probably demonstrated these barriers more than any report we did, although we attempted to address access issues in each of our reports.

We have seen so much progress in the oral health of the American people, yet about 20-25 percent of children and older Americans suffer significant oral health problems. Every year, 51 million hours of school are missed because of toothaches and tooth decay.

Thirty percent of people over age 65 today wear dentures, despite the fact that the majority of Americans middle aged and younger will maintain their natural teeth throughout their lives. Still, 30 percent of people over 65 wear dentures. That means they have trouble chewing, speaking, and smiling—all activities that we take for granted but that are difficult for people with poor oral health.

We also have such poor dental insurance coverage. Forty million people are uninsured for health care, but 108 million people lack dental insurance. Only 60 percent of people who have insurance from their workplace have insurance that covers dental care.

Medicaid's reimbursement for dental care is so poor that most dentists would prefer not to have anything to do with it. Only one in five children on Medicaid saw a dentist the year before we released this report. That's how bad it is.

In Georgia, a State legislator took the oral health report to his colleagues, and they tripled reimbursement for Medicaid services—not doubled, but tripled it. Many positive results have occurred because of these reports, and that's always gratifying. You hate to see these reports just end up on shelves.

In addition to being uninsured, there are many underinsured people, including older people who cannot afford prescription drugs, the underserved that you have discussed a great deal, the underrepresented that you deal with all the time—all of those factors impact upon access.

There are also the uninspired—people who just do not have time to care about their health. They have other priorities, so the uninspired represents the untrusting. There are good reasons why some people do not trust the health system, including the public health system.

There are also the uninformed. When we went out to implement the Children's Health Insurance Program, it became obvious that many people eligible for Medicaid did not know they were eligible, so being uninformed is also a barrier to access.

There are many uninsured people, and Hispanics are most likely to be uninsured, almost one in three. But worse, almost 50 percent of Hispanics report that they have no personal provider.

All these issues require involvement at the community level—a partnership between those who treat individual patients and those who look at populations, which we have not seen in the past.

The national strategy for suicide prevention was about implementing programs that impact upon communities in the belief that if we did, we could in fact reduce suicide in this country.

I will close with this story. For some of you, this is an old story because it makes the point that needs to be made about the continuing gap between what we know in this country and what we do.

We know a lot. We have the best technology. We have the best research enterprise, yet on so many indices, we fall very low when compared to other countries, largely because of the tremendous gap that exists between what we know and what we do.

This story that I got from Neal Lane is about a man who was traveling across the country in a hot air balloon and suddenly realized that he was lost, so he decided that he would lower the balloon to see if he could spot some recognizable landmark.

He lowered the balloon and did not see anything that he recognized, so he lowered it further. When he got to about 30 feet above ground, he saw a man working in the field below, so he yelled, "Where am I?" The man in the field said, "You're in a hot air balloon about 30 feet above ground."

The man in the balloon said, "Are you a scientist? You sound like somebody who works in science." The

man on the ground said, "I am a scientist, but how did you know that?" The man in the balloon said, "Because what you have told me is technically correct, but is of absolutely no use to me right now."

The man on the ground said, "You sound like a policymaker." The man in the balloon said, "I am a policymaker. How did you know that?" The man on the ground said, "Because you don't know where you are; you don't know where you're going; in fact, you're in the same position you were when we met, and now you're blaming me."

Over and over again as we looked at these various areas—mental health, suicide prevention, oral health—the gap between what we know and what we do is wide. It will only be filled if there is a true partnership between public health and health care of the kind we have never seen before in this country.

Public health has to inform health care in terms of surveillance and vice versa, but providers have to have the opportunity and the incentives to practice health promotion and disease prevention. The obesity report made that point more than any other we did. It showed that, for issues like the potential effects of physical activity and the actualities of what people do in terms of nutrition and physical activity, the gap is very wide, and physicians and dentists and others complain that they do not have time to talk to people about nutrition.

Americans have no incentives to exercise. Today, over 60 percent of the population are overweight, including 27 percent who are obese. You can see what has happened just since 1970. The report on obesity points out that while we know that programs of physical activity and good nutrition can reduce the onset of type 2 diabetes by more than 56 percent, we do not have a system that supports these programs. We do not even provide physical education for K through 12.

I want to make very clear my opinion that public health has this broad-based responsibility. While health care providers are on the front line taking care of patients, public health has got to work with the school system. It has to work with the worksite. It must work with the media.

Community systems that impact the lives of people must inform them and also support the development of programs that can improve people's lives. That is the challenge we face. I commend you for taking on such a difficult but relevant issue.

Laurie Garrett

Betrayal of Trust

BIOGRAPHY

Laurie Garrett is the only writer ever to have been awarded all three of the Big "Ps" of journalism: the Peabody, the Polk, and the Pulitzer.

Her most recent books, *The Coming Plague* and *Betrayal of Trust*, explore key developments in global health and disease prevention issues. Both have received widespread critical and popular acclaim. *Betrayal of Trust*, in particular, documents the decline of the global public health infrastructure. Over the years, Garrett has also contributed chapters to numerous books, including *AIDS in the World*, edited by Jonathan Mann, Daniel Tarantola, and Thomas Netter, Oxford University Press, 1993; and *Disease in Evolution: Global Changes and Emergence of Infectious Diseases*, edited by Mary E. Wilson, New York Academy of Sciences, 1994. She is a powerful advocate for more forceful and proactive responses to threats to human health.

She has written for many publications, including *Foreign Affairs*, *Esquire*, *Vanity Fair*, *Los Angeles Times*, *The Washington Post*, and *Current Issues in Public Health*. She has appeared frequently on national television programs, including *ABC Nightline*, *The News Hour with Jim Lehrer, The Charlie Rose Show, The Oprah Winfrey Show, Dateline, The International Hour* (CNN), and *Talkback* (CNN). Garrett also has delivered innumerable invited speeches to public and professional organizations.

Ms. Garrett graduated with honors in biology from the University of California in Santa Cruz. She attended graduate school in the Department of Bacteriology and Immunology at UC Berkeley and did research at Stanford University in the laboratory of Dr. Leonard Herzenberg. During her Ph.D. studies, she started reporting on science news at KPFA, a local radio station. The hobby soon became far more interesting than graduate school, and she left graduate school to pursue journalism.

At KPFA, Ms. Garrett worked in management, in news, and in radio documentary production. A documentary series she co-produced with Adi Gevins won the 1977 George Foster Peabody Award in Broadcasting, and her other KPFA production efforts won the Armstrong and CPB Awards.

After leaving KPFA, she worked briefly in the California Department of Food and Agriculture, where she assessed the human health impacts of pesticide use. She then went overseas, living and working in southern Europe and sub-Saharan Africa and freelance reporting for Pacifica Radio, Pacific News Service, BBC-Radio, Reuters, Associated Press, and others.

In 1980, Garrett joined National Public Radio (NPR) and worked out of the network's bureaus in San Francisco and later in Los Angeles as a science correspondent. During her NPR years, she was awarded by the National Press Club (Best Consumer Journalism, 1982), the San Francisco Media Alliance (Meritorious Achievement Award in Radio, 1983), and the World Hunger Alliance (First Prize, Radio, 1987).

In 1988, she left NPR to join the science writing staff of *Newsday*, where she remains today. Her *Newsday* reporting has earned several awards, including the *Newsday* Publisher's Award (Best Beat Reporter, 1990), Award of Excellence from the National Association of Black Journalists ("AIDS in Africa," 1989), Deadline Club of New York (Best Beat Reporter, 1993), First Place from the Society of Silurians ("Breast Cancer," 1994), and the Bob Considine Award of the Overseas Press Club of America ("AIDS in India," 1995).

During the academic year 1992-93, Ms. Garrett attended Harvard University as a visiting Fellow in the Harvard School of Public Health.

She is a member of the National Association of Science Writers and served as the organization's President during the mid-1990s.

BETRAYAL OF TRUST

(Edited transcript)

by Laurie Garrett

Our task is to look at the relationship between primary care and public health and to do so in the age of bioterrorism. Historically, examining this relationship is a difficult task. Primary care—medicine generally—and public health have been at odds in this country, often almost in a state of policy warfare.

Going back to colonial days in America, there was no real concept of public health, but the idea of improving the health status of the whole population came down to protecting populations from epidemics. The key players tended to be religiously inspired physicians.

In the earliest colonial days, we think of Cotton Mather, for example, the first person to stand up and call for universal smallpox vaccinations. Smallpox vaccination at this time, being before Jenner, was not pleasant.

With the dawn of the germ theory era in the 1870s and 1880s, we suddenly had the basis for the creation of the discipline of public health based on identification of microbial disease and containment of its spread.

From the very beginning, implementation of public health law was strongly opposed by organized medicine. The American Medical Association (AMA) and its predecessor organizations staunchly opposed almost every early initiative taken to control the spread of infectious diseases in this country.

For example, when Herman Biggs, one of the true heroes of the dawn of the public health era in America, tried to institute tuberculosis name identification quarantine and treatment in New York City, it was the physician organizations and primary care physicians who opposed it so staunchly that it went all the way to the State Supreme Court, which upheld the right of the City of New York and its public health agencies to create a registry of those who had tuberculosis.

Why was it opposed? Because it was perceived as interfering with the entrepreneurial nature of primary care at that time. No one was opposed to giving the names of poor people with tuberculosis. They were opposed to giving the names of their paying clients because they did not want any competing physicians to know the names of their paying clients.

It was not about civil liberties. It was about competition. The same thing happened in 1877 when there was a smallpox epidemic in Minnesota, and the first real public health leader in the State of Minnesota, Charles Hewitt, tried to bring it under control through the first quarantine identification barricade system to be set up for smallpox control in North America.

Again, it was organized medicine that tried to oppose him—refused to give the names of patients. However, once it worked and he could demonstrate that it was working, the State Legislature took control and ordered physicians to follow his rulings.

As we move into the twentieth century in 1919 California—and very few people know that the State of California in a popular election voted for universal health care and to create a universal health care system in the State—organized medicine formed an unholy alliance.

I say that with the absolute literal meaning of unholy alliance, with the Christian Scientist Church moving to block universal health care in California. Together, they coined the term that has come to be most often pejoratively applied to universal health care, "socialized" medicine, and successfully reversed the popular State vote in a second popular State vote.

In 1920 in Los Angeles County, which is in yet another major financing crisis for public health, there was only one hospital in the county, and it was a very small, fledgling facility, LA County General. With the massive size of this county and the rate of population growth, there was a desperate need to create an infrastructure of public health clinics spread throughout this county.

Over and over again, the public health leadership of the city and county tried to get the county board of supervisors to allocate the funds. They were quashed and squashed repeatedly throughout the 1920s and into the 1930s by the American Medical Association, which labeled it unfair competition.

We have a long history that takes us up to 1947, a historic turning point that really decided this struggle between government and public health agencies or services and the private physician or organized physicians with a balance sheet decidedly on the side of organized medicine. That was the Hill-Burton Act of 1946.

The Hill-Burton Act had the intention of modernizing hospitals nationwide, providing Federal funds to

bring hospitals up to speed, to build x-ray machines and what was then considered state-of-the-art facilities. The Hill-Burton Act fundamentally changed the power structure.

First, it immediately became obvious that physicians who were not affiliated with a Hill-Burton-improved hospital were of lower prestige and esteem in their community.

Second, it increased the power of the specialist so that, suddenly, the primary care physician was ancillary in the system and the real stars started to rise. They were the entirely hospital-based physicians who had specialties relying on all the fancy new equipment that the Federal government had paid to put in place.

This shift to a hospital-based power structure fundamentally altered the clout of public health because it meant that the entire focus was on the hospital, not on the community at large and not on the notion of the primary care physician working out of a storefront in each little town or each neighborhood. Those people were quickly beginning to disappear.

A third point touched on in Dr. Satcher's remarks related to the great racial divides in health marker achievements in our society. The Hill-Burton Act was used to fund construction of segregated hospitals. Throughout the United States, "whites only" hospitals received the most Hill-Burton money.

Some of the landmark cases that went to the United States Supreme Court and that formed the basis for the Civil Rights Act of 1964 in arguments put forward by then Vice President Hubert Humphrey on the floor of the Senate focused on African-American individuals who died in parking lots outside of emergency rooms in segregated Hill-Burton-funded hospitals that denied them care.

Nothing could be further from the model of public health than denying someone admission to an emergency room on the basis of race. Clearly, a dichotomy had been achieved that was of severe proportions.

When I was writing *Betrayal of Trust,* I was very conscious as I was laying out this very detailed history of how we have reached the sorry state of our public health infrastructure nationally and globally that many of my remarks were going to rub the wrong way for organized medicine.

The historical record is the historical record. It is hard to argue with it, but, nevertheless, organized medicine in this country has never been a big ally of public health, nor would it be likely to find *Betrayal of Trust*, I thought, a welcome achievement.

It was to my astonishment and wonderfully heartwarming surprise to find I was really quite wrong. When I began to go on the lecture circuit after release of the book and to do grand rounds at medical schools, I suddenly realized just how angry primary care physicians are in this country—so angry that they are willing to entertain public health and think about that notion of a trust.

The task now is to figure out where the lines are and how everything is really defined. Not how they have come to be defined inaccurately and mistakenly in the latter half of the 20th century, but what constitutes appropriate definitions of primary care and public health as we go into the 21st century.

I like to think of public health as a trust entered into between the citizenry and the government. The citizenry on its side of the trust says we will abide by those restrictions and health guidelines laid down by government in the voice of public health, and we will pay our taxes to fund that effort. That will include agreeing to be vaccinated when indicated, to let strangers come onto our property and inspect our well water, to have auto emission checks on our automobiles, to wear seat belts, and so on.

On its side of the trust, government says we will spend money, and that money will be spent to try to ensure the highest possible standards of safety for your air, water or food supply, your children in their schools, and, generally, population-based health.

In that trust, primary medical care delivery obviously plays a role, but what you all will need to explore in greater depth is exactly where that role fits, where the overlaps are, and where the unique positions are.

We have reached a point in the United States where we have to look at where we stand as a healthy society, not just the *Healthy People* report's goals and so on, but also the failures to achieve past goals laid out in *Healthy People*. We have never achieved the goals of a single *Healthy People* report as a society, yet we are the biggest spender in the world on health.

Last year, according to the Health Care Finance Administration (HCFA), we spent $1.3 trillion on health in America, constituting 13.3 percent of our Gross

Domestic Product (GDP), yet we ranked 24th in the world in disability-adjusted life expectancy and at the very bottom for infant and child mortality achievements in the wealthy world.

In contrast, Japan far outlives us and has far outachieved us by every health marker, and it spends only 7.8 percent of its GDP on health. The UK far outstrips us on all health markers, yet it spends only 6.3 percent of its GDP. HCFA forecasts that by 2010, at our current rate of health inflation spending, we are going to hit almost 16 percent of our GDP.

You have to ask yourself what's appropriate. Do we want to spend one out of four dollars of our GDP on health? Is that an appropriate ceiling? It is an insane situation when our spending is so out of sync with our achievement levels.

Clearly, being out of sync has a lot to do with the fact that we're spending—depending on whose numbers you look at—between 30 and 32 percent of our health dollars, $1.3 trillion, on the final 30 days of life and less than two percent on anything that could by the broadest definitions be categorized as public health.

We know what has made the difference in life expectancy in the 20th century. Dr. Satcher said it himself. It's been basic classic public health interventions, community health-based interventions, yet where we put our dollars is on the exact opposite end.

We also have a real credibility problem. There have been some questions before about what you would do with curricula and so on. Let's step back for a moment. In 1993, I was a Fellow in the Harvard School of Public Health, and the first day I arrived, I wandered around. I was in that huge complex that many of you probably know very well on Huntington in Boston. There are the giant white marble structures, one after another, that constitute Harvard Medical School and its affiliated hospitals. I'm looking for the School of Public Health, and I can't find it.

I finally see this run-down, beat-up old stucco building that has an air intake over the motor pool so that everybody in the whole building has carbon monoxide poisoning by 4:00 in the afternoon in the School of Public Health. I thought, "That says it all. The money's over there, not over here. The prestige is over there and not over here."

That translates, as you get down to the local level, into the dollar for dollar relationship. You want to be an MD, MPH, and go work in public health? You can expect a top salary in, say, Omaha, Nebraska, of $55,000. Whoopee.

Springfield, Illinois, wants a county health director, an MD, Ph.D., for $65,000. Now, what would the local major hospital be offering for the head of the hospital? Stock options plus what, a million dollars a year? This skewing in salary says a great deal about the level of respect.

According to the American Public Health Association, the average salary for a health commissioner in the Nation is under $100,000 a year. Those are largely individuals expected to be dually degreed as an MD and either an MPH or Ph.D.

We were willing to live with all this until anthrax came along. As a Nation, as much as public health might bellyache, there really was no challenge fundamentally to the situation until anthrax happened, and suddenly members of Congress said, "Wow. There's this thing called public health infrastructure, and we don't have one."

Congress, as I'm sure anybody here in Washington knows, likes quick fixes. They wanted to believe that by ordering the rapid manufacture of smallpox vaccine stockpiles and mass purchase of ciprofloxacin, the threat of bioterrorism was taken care of.

Then it dawned on them that you have to have people who know how to administer smallpox vaccinations. You have to have the capacity to mobilize a population, to have them line up in an orderly manner, to keep track of who has and has not had a vaccination, to track side effects, and to be able to know who may have had a lethal response to the smallpox vaccination. All of a sudden, you've conjured up the need for an infrastructure that does not exist.

No city in this Nation, including mine, New York, which is probably the most public health-activated city in the country, could right now do mass smallpox vaccinations under the duress of an actual event.

If given a few weeks to spread it out, New York could do it. The last time we had the necessity was 1947 when a traveler who had been in Mexico and had acquired smallpox on his journey came to New York City as a tourist and visited everything from the Statue of Liberty on up before succumbing to smallpox.

At that time, coming right out of World War II, public health had a lot of power and respect in the

community. It had certain legal instruments at its hands that no longer exist for almost any public health department in the entire United States.

It was able to order mass vaccination. In less than six weeks, 6.5 million New Yorkers were vaccinated against smallpox. That is not a goal that could be achieved at this moment anywhere in the Nation. We are not even where we were in 1947.

The other key point that suddenly is dawning on people in Congress as they contemplate the Fiscal Year 2003 budget appropriations is that numerous studies have been done—the key one is probably the Meltzer study from the Centers for Disease Control and Prevention (CDC) about four years ago—that look at the relationship between the speed with which primary care physicians identify the emergence, the deliberate release—they would not necessarily know it was deliberate but the emergence of an epidemic—and the capacity to respond and the subsequent cost and life lost.

The Meltzer model looked at a cropduster that had the appropriate nozzle sizes, not the ones Ashcroft grounded in September. In other words, one had been used to distribute *Bacillus Genesis* and was now being used for distribution of anthrax *bacilli* on a population of 100,000 people on a nice calm evening with multiple passovers by the spraying plane.

In that model, if physicians correctly identify the presence of anthrax in a timely fashion and alert their public health system, which then responds in a timely fashion so that within 24 hours of release, there is a commencement of prophylaxis treatment of the population, you can keep deaths down to 5,000 at a cost of about $128 million.

However, the more likely scenario is that at least six days would elapse before widespread recognition and response. At that point, in the Meltzer model, you have 35,000 dead, and it has cost the community $26 billion to deal with the problem.

Clearly, that has prompted some need to see how you create a relationship between the observant primary care physician and the public health infrastructure in a true two-way manner.

The other thing that we have to look at from this past Fall that should be an eye-opener is that we have absolutely no idea how many millions of Americans went in for ciprofloxacin. We do know that lots did because the whole national stockpile of ciprofloxacin was gone by October 10th.

We have no idea and no ability to track what has happened to organisms that were exposed to cipro through inappropriate use last Fall. We do know one thing. Lots of doctors wrote prescriptions. Why? How could they possibly justify doing that? How could they possibly justify writing prescriptions for which there was no medical indication for such a powerful and vital antibiotic as ciprofloxacin?

Number one, if you're going to say, "Oh, my favorite patients I don't want to die of germ warfare. I'm going to write them a prescription without any medical indication whatsoever," why didn't you use doxycycline? Why did you go to ciprofloxacin? What that said was that there is a huge primary care population that needs some educating.

Number two, because we do not have any reciprocal relationship between the prescribing physician and the tracking surveillance public health communities, we have no idea who all those people were and no ability to track them and determine how much drug resistance we have fostered. We do have some models to look at.

Cipro was introduced by the national health care system in the UK as treatment of choice for gonorrhea in 1991. This is with appropriate indication, a motivated patient population, and a very clear protocol for use.

Despite those factors, *Lancet* recently published a study based on Scotland's experience of a steady increase in drug resistance, and now more than five percent of the gonorrhea population is resistant to cipro. That is with appropriate use.

China, according to Dr. Stuart Levy at Tufts University, has seen its cipro resistance go from zero detectable to 60 percent in five years in the *E. coli* population. There is good reason to believe that we performed great folly last Fall, but we have no ability to answer the question. I think that alone ought to be quite an eye-opener.

Just this week in CDC's *Morbidity and Mortality Weekly Report* is a report on invasive strep pneumonia. The report is interesting because the intent is to focus on laboratory methods for identification. It notes that less than half of all medical microlabs in the Nation currently perform appropriate exams to determine

whether or not drug-resistant strep pneumonia is in their hospital populations.

But more interesting to me was that they now estimate that 63,000 cases of invasive strep occur in the United States annually, resulting in 6,100 deaths. Of those cases, 25 percent involve penicillin-resistant strep; 14 percent are multi-drug resistant.

This is part of a larger picture of what we are seeing that ought to require urgently a much more intimate relationship between the primary care physician-prescribing population and the public health surveillance population.

Overall, it is an old story. We are losing the efficacy of our antibiotics. It has reached a crisis point already. It's not, "Oh, my goodness. Some day, they won't work." They already are not working.

According to CDC's drug-resistant bacterial nosocomial report of 2001, during the 1990s, 40 million hospitalizations occurred in which an individual nosocomially acquired a bacterial infection, 2 million of which were drug resistant, and 100,000 of which were lethal.

That already constitutes a public health epidemic-level catastrophe. Steven Palunbi at Harvard University estimates that *Staphylococcus aureus* resistance alone is costing us close to $33 billion a year in lost productivity, loss of life, and excessive treatment necessity.

Overall, we have seen infectious disease incidents increase in America at a time when we thought we could lock the book on infectious diseases. Again, a CDC study estimates that, between 1980 and 2000, the numbers of Americans coming down with severe infectious disease doubled. When I say severe, I mean requiring hospitalization, which is now at about 170,000 hospitalizations for infectious diseases.

Another place of needed interface is Semmelweiss sanitary practices. What we are seeing is that the difficulty of hospital ecology is rising, obviously in large part because of our aging population.

More and more people have very complicated chronic disease problems. They are in the hospital with heart problems, but they have underlying diabetes. Perhaps two years ago, they underwent chemotherapy for some form of cancer. We have got these patients now clogging up our hospital rooms. They are on multiple IV drips, catheters, shunts, every imaginable bridge between their external ecology and internal ecology.

Then, we have a nursing shortage, and we are pushing our nurses to work harder and harder on more patients and to do it all faster. We are not reimbursing managed care for a lot of hospital tests. In fact, the physician is being urged to minimize the number of lab tests he or she orders. There is more and more operating in the blind. Do we have a drug-resistant organism here, or is this just a really sick patient with no immune response? Should I just go ahead and shoot in the dark? Or do we actually send to the lab and find out what the resistance patterns are that are floating around in our hospital?

What we see clearly is that we have a breakdown in standard universal precautions in our hospital environments. An interesting study published in *Lancet* last year compared United States and European hospitals. Those that underwent extensive full-year-long, staff-wide training— I mean just drilling it in—achieved 81 percent infection control, meaning that they got 81 percent compliance across the board through all procedures. In typical U.S. hospitals, only 12 percent achieved infection control. Worse, 40 percent is the average compliance level in U.S. hospitals.

As we are interested in dentistry here, I'll remind you that it is practically a blink of an eye in time ago that we had the Acer case in Florida. Remember Kimberly Bergalis? How could we forget? The Acer case in Florida in which six patients seeing the same dentist came down with a genetically identical strain of HIV. Acer succumbed without giving us his records or much information.

The key point here is how vigorously many dental organizations opposed imposition of universal precautions and with what anger many oral surgeons insisted that what really ought to be done is to test the entire patient population and not treat the ones that are HIV positive.

It is not that long ago that we had orthopedic surgeons showing up in space suits because they did not want to risk getting HIV rather than understanding universal precautions and recognizing that risk is always there.

It is not just HIV. It is hepatitis B, hepatitis C, and on and on, and it ought to be everybody's mandate to make the hospital ecology the safest possible ecology,

not just for the health provider but for the entire patient population, visiting family members, and the community at large. There is an obvious place to increase relations between public health and primary care and secondary and tertiary care.

We have some acute shortages of instruments used by primary care services for public health good as well as individual good, the most outrageous being our pertussis-diphtheria-tetanus vaccine shortage and, every year, our later and later availability of flu vaccine. Globally, we are in desperate need of meningococcal vaccine.

We have now a three-years-long-running meningitis epidemic in West Africa. We now have an epidemic in West Africa of yellow fever for the first time in several decades, and it turns out we are out of yellow fever vaccine.

There is an obvious bridge there between primary care and public health in terms of bringing pressure to bear to identify the reasons for these shortages and try to come up with appropriate legislative and policy initiatives that could stop gap these problems.

We have the possibility of the infusion of an extraordinary amount of cash into public health in the next 24 months. If the Bush budget proposal goes through for FY 2003, we are looking at about a billion dollars suddenly available for States and localities to improve public health. This is all with bioterrorism as the framework.

It is a good news/bad news story. The good news is that finally somebody in political power recognizes that there is a need for public health infrastructure, that there is a crisis that calls for that need on a more immediate basis, and that it is going to take some money.

The bad news is that there is always the threat that it is going to skew everything to one problem, bioterrorism, as if that problem exists in isolation, as if there were no overlaps, as if it had nothing to do with the health of populations as a whole on an ongoing basis.

I already am hearing now from public health departments all over America of staff members who do nothing but go to bioterrorism meetings all day, every day. I hear from hospitals the same complaint: "Our infectious disease staff is constantly in bioterrorism meetings." That's great, but who's tracking HIV and other infectious diseases?

That also poses a problem because, for public health to have a strong infrastructural response to bioterrorist threat, public health has to be able to work with its counterparts in law enforcement. Public health has credibility problems in many of the underserved communities of this country already. And to the degree that public health and primary care are seen as wedded to police forces or the FBI, credibility will be even harder to maintain in communities that feel they are targets of the police and the FBI on an ongoing daily basis.

So, finally, where does that take us? What do we need? As I said before, primary care physicians are angry right now. They have taken salary cuts. They have seen their workload increase. They have had a loss of control, even down to literally what procedures they are allowed to perform on individual patients based on that patient's insurance company's provisos.

And they are seeing frustrating community-based health problems that they cannot alone address and that they are not getting reimbursed for taking the time to try to address.

For example, everybody involved in HIV care has seen this surge of unsafe sexual practices among men who know they are HIV positive but have decided that drug treatment is making them feel terrific, and it is not really a lethal disease, and the heck with it. They are back out there, and they are spreading drug-resistant strains of HIV and primary infection.

The obvious solution that would benefit both public health and individual patients is for primary care physicians to take time when HIV patients come back for another blood work-up and perhaps a change to another protease inhibitor in their cocktail, or what have you, to remind them of their social responsibility—that they are a member of a society and they must use a condom every time they have sex with a partner. No exceptions. Physicians don't get reimbursed for that time. Our society does not reward the doctor who takes another 20 minutes to lecture that patient and try to make that patient be part of a social environment. So we have a real failure here, a system failure, as Dr. Satcher put it.

What would make some differences? I would love to see more concretizing of some initial bridges put in place last Fall because of anthrax in New York and because of West Nile virus.

I would love to see things like daily communications between public health and emergency rooms, infectious disease departments, hospital director's offices, and primary care physician offices informing of outbreak trends, of drug resistance trends, with a real reciprocal flow of information that is concretized.

There is also a real need to look at several of these computer algorithm systems to see which ones will work for syndromic surveillance in hospital settings and clinical settings so that it is possible not to have to wait for individuals to become so sick that we are referring lab samples to the CDC to determine if it is anthrax.

Putting in computer systems that can spot syndromic patterns emerging in hospitals in a community and having that analysis available in real time to both public health analysts and health providers would go a long way towards creating better bridges and a more rapid awareness in surveillance of what's going on.

A sense of intellectual parity and mutual respect will go even further. It is hard to have intellectual parity when you do not have economic parity. It is hard to see eye to eye between communities that have a history of tension. Unless there can be some sense of mutual respect, public health and primary care are always going to be at odds.

I will just close with one final anecdote. When Kathy Nguyen, a medical clerk at Manhattan Eye and Ear, came down with inhalational anthrax, CDC and the New York City Health Department swooped in both at her hospital and at Lennox Hill, where she had gone for treatment. They immediately started performing nasal swabs on a randomized population group and conducting swabs at her worksite to determine potential extent of exposure.

I have never run across an angrier potential patient population than the physicians working at Manhattan Eye and Ear and Lennox Hill, all of whom insisted, "But they didn't swab me."

Now, what is a nasal swab during an outbreak? It is not diagnostic. It is not going to tell you that you have or have not been exposed to anthrax. It is purely a surveillance epidemiological tool.

The fact that the physician population could not understand that and that they raised true anger with some threats of lawsuits against the CDC and the City Health Department tells you how wide the gap of understanding is. Here was epidemiology on one side and individual care on the other side, and the two just were not communicating.

Interestingly, the postal workers seem to have understood what the nasal swapping was much more rapidly than did the physician population. That illustrates just how wide the gap might be and tells us also what some of our target might be.

Doug Campos-Outcalt, M.D., M.P.A.

THE CHALLENGE OF REFORMING EDUCATION TO IMPROVE ACCESS TO UNIFIED INTERDISCIPLINARY PUBLIC HEALTH SERVICES FOR PEOPLE IN UNDERSERVED RURAL AND URBAN COMMUNITIESS

BIOGRAPHY

Dr. Doug Campos-Outcalt is the medical director of clinical services at the Maricopa County Department of Public Health. He is also the associate chair for the University of Arizona College of Medicine, Department of Family and Community Medicine, Phoenix Campus, and is board certified in both family practice and preventive medicine/public health.

Dr. Campos-Outcalt received his medical degree from the University of Arizona in 1979 and completed residencies in family practice at the University of California, Davis, and in preventive medicine at the University of Arizona. He received a Master's in public administration from Arizona State University in 1985.

He has been a family physician in the medically underserved communities of Guadaloupe and South Tucson, has served as deputy director of the Arizona Department of Health Services, and has consulted with local and tribal health departments throughout Arizona. From 1986-1988, Dr. Campos-Outcalt was a public health consultant in Papua New Guinea and has returned there twice, once as a consultant for the World Health Organization.

He has authored over 60 papers in scientific journals and edited a textbook on preventive medicine recently published by McGraw-Hill. He is an active teacher of family practice, preventive medicine, and public health. Currently, he is a Robert Wood Johnson-Institute of Medicine Health Policy Fellow in Washington, D.C.

THE CHALLENGE OF REFORMING EDUCATION TO IMPROVE ACCESS TO UNIFIED INTERDISCIPLINARY PUBLIC HEALTH SERVICES FOR PEOPLE IN UNDERSERVED RURAL AND URBAN COMMUNITIES

by Doug Campos-Outcalt

Introduction

Public health and primary care are natural allies. Both are more effective and achieve more when they work collaboratively, but collaboration often does not occur. Each field has evolved separately, is taught in separate colleges, and is practiced in different settings and systems with different incentives and goals.

What I hope to do in this article is suggest ways we can begin to bridge these separations. I will first suggest a definition for public health, which will serve as the foundation for the rest of the discussion. It will include not only what public health is and does, but also what it is not. I will then describe suggested roles for primary care clinicians in systems that enhance collaboration and will finish with a preliminary set of skills and knowledge for different levels of expertise and with training options for achieving them.

I will admit from the outset that many of these ideas are in an early stage of evolution. I am sure the discussions at this meeting will help refine them.

What is Public Health?

Public health is the discipline that promotes and protects the health of the whole public. The Core Public Health Functions Steering Committee, established by the Public Health Service, constructed a list of 10 essential public health functions, shown in Table 1 (See page 53).[1] These 10 functions allow public health to prevent epidemics and the spread of disease, protect against environmental hazards, prevent injuries, promote healthy behaviors, respond to disasters and assist in recovery from disasters, and assure the quality and accessibility of health services. The Institute of Medicine Work Group on the Future of Public Health condensed these functions into three broader areas of responsibility: assessment, policy development, and assurance.[2]

Public health is not and should not be equated with publicly funded safety net health care. While safety net health care is an important function and contributes to better overall public health providing medical services to those who lack access to other sources of care is a medical system function, based on a medical model of individual care. Public health is population based; the patient is the entire community.

Equating public health with safety net medical services causes two problems. It obscures the main functions of public health, so that the many public health activities, which are actually more important in achieving improved overall community health status, are under-recognized and under-appreciated. It also causes, like it or not, a lack of support for public health among those who do not need these safety net services. Public health has been undervalued the past half century because many in society cannot see its relevance to them. In a way, public health has been a victim of its own success; the more a disease or condition is controlled or improved, the less obvious is the need for the intervention.

The fundamental tool of public health is epidemiology. The classic public health approach to a problem is to use epidemiology to first study and define it and find the cause, then to intervene to address the cause, and, finally, to evaluate to see if the problem improves. The interventions available include laws, regulations, product design, immunization, antibiotics, taxes, and education, to name a few. This list makes some uncomfortable. It smacks of government and government interference. The reality is that many public health activities often involve government and government interference. The factor that frequently determines what public health is able to accomplish is how much interference with individual freedom the public is willing to accept in order to improve the health and protection of the whole community. Public health has historically involved using police powers to protect the community. The public wants public health officials to have and to use these powers when necessary, but not to abuse them.

While education to affect individual and community choices is an important tool, the sad truth is that, in many instances, the more individual choice can be eliminated from the equation, the better the outcome will be. This seems so counter-intuitive to our individualistic American values that merely stating it often evokes hostile reactions. But let me provide some illustrations.

At the end of the last century, the Centers for Disease Control and Prevention (CDC) published a series of articles on major public health accomplishments of the past 100 years.[3] The list includes what some experts consider to be the interventions that have been the most important in improving the public's health: immunizations, control of infectious disease (which has been due to sanitation, clean water, and improved living conditions), motor vehicle safety, consumer product safety, food safety and improved nutrition, fluoridation of water, cardiovascular disease reduction, tobacco control, and healthier mothers and babies. A close look at the accomplishments on this list and study of the methods used to achieve them will show that very few depended on individuals making correct choices. Do we allow individuals to decide to build or buy houses without sanitation and clean water? Do we allow parents to decide if their children should be immunized before attending public school? (Although more complex than time allows us to explore, the thrust behind school immunization laws, despite individual opt-out options, is to compel immunization.) Do we educate employers about work place safety and then leave it to them to do right?

One of the major challenges facing public health today is chronic disease. Much of the burden of chronic disease is caused by individually chosen lifestyles or a series of choices over time. The public is willing to accept only so much government interference with these choices. The only tool left to us is education, which will

achieve some benefits, but not to the degree possible if there were a regulatory or legal impact point. This new frontier for public health will be a continuation of the constant tension between the right of the individual and the good of the community. The major difference is that, other than the economic impact of chronic disease, these individual choices do not affect others, and, consequently, there is much less traction for the argument that choice should be limited.

The Interface of Primary Care and Public Health

Public health involves the care of the community; primary care involves the care of individuals. But the community consists of a number of individuals, so synergy should be possible.

The most effectively integrated system of public health and primary care I have ever seen was the Maricopa County Department of Health in the early 1980s. It consisted of 12 primary care clinics, located throughout the county, and the Public Health Department, located in central Phoenix. The clinics were under the direction of the Public Health Department and provided one-stop shopping for all public health services in a primary care setting including the Women, Infants, and Children (WIC) program, well child care, immunizations, prevention services for adults, prevention-oriented primary care services, family planning, prenatal care, tuberculosis (TB) treatment, and sexually transmitted disease (STD) treatment.

Each clinic had a public health nurse who provided home health care and follow-up as needed. The nurse also served as a social worker and as someone with a finger on the pulse of the community. Such public health nursing has recently been proven to be a very effective intervention with long-term community and individual benefits.[4, 5]

The Public Health Department supervised the care in the clinics and provided clinical guidelines and the latest recommendations from CDC to the clinicians. If a community outbreak of infectious disease occurred, the clinics were the locations where individuals were sent for evaluation, treatment, and immunizations, all under the direction of public health officials who were in close contact with the clinicians. Regular training was provided for the staff on public health topics and on primary care clinical updates. Unfortunately, the system was dismantled.

When Arizona initiated a Medicaid program in 1982, it started with a pre-paid, capitated system involving competitive bids from private and public systems. Since its beginning, the Arizona Health Care Cost Containment System has been administered by a separate State agency having little concern for public health issues. Its role is to oversee the medical care provided by managed care companies.

Maricopa County formed a managed care health plan and competed with the private sector. The clinics were taken out of the Public Health Department and given to the County Hospital and Health Plan to administer. Over time, the public health functions were physically removed from the clinics, and patients left the system, choosing private providers. (I am not implying that these two trends are causally related.) Today, there is in one building a Department of Public Health that provides categorical clinics for TB, STDs, family planning, and refugee health care. Immunizations are provided in shopping malls, churches, and the like, sporadically at each location. No general public health nursing remains. The 12 clinics provide medical care only.

This story is an example of a nationwide trend of the public sector decreasing or eliminating its health care responsibilities and of public health remaining as an inadequately funded function. The new appreciation for the importance of public health, resulting from the events of the Fall of 2001 and the reality of the threat of bioterrorism, offers some hope that the public health infrastructure will be augmented. This improvement can be used for dual purposes—bioterrorism preparedness and other important public health functions. It will not, however, solve the problem of the uninsured and underinsured.

Public health now must find ways to form collaborative relationships with systems of care and providers. I use the word “system” purposefully. The literature is quite clear that to improve process and outcomes, systems, not individual practitioners, need to be addressed.[6-9] Public health should work with systems and the clinicians that practice in them to form collaborative relationships that benefit both. Here again, the threat of bioterrorism may provide the impetus. Prior to 9-11-01, at least in our community, hospitals and

health plans had little interest in any real collaboration with the Public Health Department, but they now have much interest. This opportunity should not be lost.

The Role of Primary Care Clinicians in Public Health

Primary care clinicians and public health staff have different jobs that require different skills. It is my belief that we should not try to make public health workers out of primary care clinicians. Public health should work with clinicians to make their contribution to the health of the public more effective and to increase their collaboration with public health staff.

What exactly should the public health role of primary care clinicians be? I can think of five primary functions: 1. Implementing recommended preventive services. 2. Serving as the foundation of the surveillance system. 3. Appropriately referring to the public health department. 4. Accepting referrals from the public health department. 5. Avoiding counter-public health activities.

Counter-public health activities include incorrect treatment for TB and STDs (and arguing about it when it is pointed out); lack of recognition of diseases or the potential for diseases of public health importance (e.g., not knowing that rash and fever might be measles or rubella); failure to report reportable diseases; lack of infection control measures; communicating inaccurate information to patients or, worse yet, to the public; and derogatory remarks about the public health department.

To help clinicians with this perceived role, I suggest four levels of public health expertise: basic, intermediate, advanced, and leadership. All primary care clinicians should have basic expertise. Intermediate expertise could be the goal of those having more direct involvement with public health, such as sentinel clinicians and health plan medical directors. Advanced training would be advisable for those serving as consultants or community-based medical directors to public health departments. Those aspiring to public health leadership should have advanced training. The knowledge and skills to be taught for each level are contained in Table 2 (See pages 54-55).

The options for achieving these levels should include the standard approaches plus new methods to assist those who are practitioners with time constraints. The array of possibilities includes full- and part-time fellowships, residencies, Web-based courses, teleconference courses, and on-site practical experiences. Benchmarks of achievement could include standard degrees (e.g., Bachelor's, Master's), Board certification, and other ability-based certificates.

Conclusion

Public health and primary care are natural allies in the struggle to improve health. For the two fields to work productively and collaboratively, each must understand what the other does. I have tried to provide a description of what public health is, what it is not, and how public health and primary care can be integrated. I have advocated for the training of individuals and for interventions with systems to improve performance. I have suggested four levels of public health expertise for primary care clinicians and listed the skills and knowledge needed to reach them. Finally, I have listed a few ways in which training can occur. I expect that in this workshop, we will debate and improve these ideas and begin to elaborate on the details.

References

[1] Public Health Functions Steering Committee, Public health in America. US Department of Health and Human Services, June 1995. *http://www.health.gov/phfunctions/public.html*

[2] Institute of Medicine. The future of public health. National Academy Press, Washington, DC, 1988.

[3] Centers for Disease Control and Prevention. Ten great public health achievements—United States, 1900-1999. MMWR 1999; 48: 241-243.

[4] Olds D, Henderson CR, Cole R. et al. Long-term effects of nurse home visitation on children's criminal and antisocial behavior. 15 year follow up of a randomized controlled trial. JAMA 1998; 280:1238-1244.

[5] Earls F. Positive effects of prenatal and early childhood interventions. JAMA 1998; 280:1271-1273.

[6] Institute of Medicine. Creating safety systems in health care organizations. (Chapter 8) In To err is human. National Academy Press, Washington, DC, 2000.

[7] McLaughlin CP, Kaluzny AD. Total quality management in health: making it work. Health Care Management Review 1990; 15 (3): 7-14.

[8] Donabedian A. The epidemiology of quality. Inquiry 1985; 22: 282-292.

[9] Schneider EC, Riehl V, Courte-Wienecke S, Eddy DM, Sennet C. Enhancing performance measurement. NCQA's road map for a health information framework. JAMA 1999; 282:1184-1190.

TABLE 1

Essential Public Health Services

1. Monitor health status to identify community health problems.
2. Diagnose and investigate health problems and health hazards in the community.
3. Enforce laws and regulations that protect health and ensure safety.
4. Inform, educate, and empower people about health issues.
5. Mobilize community partnerships to identify and solve health problems.
6. Link people to needed personal health services and assure the provision of health care when it is otherwise unavailable.
7. Evaluate effectiveness, accessibility, and quality of personal and population-based health services.
8. Assure a competent public health and personal health care workforce.
9. Develop policies and plans that support individual and community health efforts.
10. Research new insights and innovative solutions to health problems.

TABLE 2
Levels of Public Health Expertise for Primary Care Clinicians

I. BASIC LEVEL

- Functions and powers of local health departments
- Roles of local, State, and Federal agencies
- Medical care of STDs, TB, and other diseases important to public health
- Appropriate use of public health resources (e.g., contact tracing, directly observed therapy, isolation and quarantine)
- Recognition of unusual diseases and patterns
- Reporting of reportable diseases and conditions
- Accurate recording of vital statistics
- Clinical prevention (e.g., screening, immunization, counseling, chemo prophylaxis, travel advice)
- Interpretation of medical literature (e.g., basic epidemiology and statistics)
- Ability to find about information about environmental concerns
- Referral to community resources
- Role in emergencies and disasters
- Evidence-based prevention recommendations

II. INTERMEDIATE LEVEL

- All of the basic knowledge
- More advanced epidemiology and statistics
- Unusual presentations and complications of STDs and TB
- Confirmatory labs for important infectious diseases
- Basics of environmental risk assessment
- Medical aspects of disasters
- System aspects of clinical prevention

Table 2: Levels of Public Health Expertise for Primary Care Clinicians ***(Continued)***

III. ADVANCED LEVEL

- All of the basic and intermediate knowledge
- Use of epidemiology and statistics for assessment
- Public and press communications
- Implementation of public health police powers
- Management of medical aspects of disasters and emergencies
- Emergency medical transport systems
- Medical registrar functions
- Performing environmental risk assessments
- Collection and transport of lab specimens
- Animal control
- Water systems
- Food safety
- Medical information systems
- System design for improved performance
- Quality improvement
- Knowledge of community resources

IV. LEADERSHIP LEVEL

- All of the basic, intermediate, and advanced knowledge
- Public policy formulation
- Personnel
- Budgeting and finance
- Procurement
- Grants and contracts
- Planning and evaluation
- Legal responsibilities and limits

Debbie H. Ward, Ph.D., R.N.

The Challenge of Reforming Education and Practice to Foster the Delivery of Primary Care and Public Health Services Through Interdisciplinary Teams

BIOGRAPHY

Dr. Debbie Ward is associate professor and vice chair of the Department of Community Health Care Systems and an adjunct associate professor in Women Studies at the University of Washington in Seattle. After obtaining a Bachelor's degree in government from Oberlin College, she worked as a home health aide in rural Connecticut. She then earned a Master's degree in nursing from Yale University and a Ph.D. in health policy from Boston University, where she was a Pew Doctoral Fellow.

Early in her career, she trained and practiced as a family nurse practitioner in the inner city clinic of the Yale-New Haven Medical Center and as a solo geriatric practitioner in a public health department in Hartford. Her research and practice interests include public health policy and politics, unpaid and low-wage caregiving, and health service delivery in the United States.

Dr. Ward is involved both locally and nationally in the changing format and content of health service delivery. She has been active in applying practical computer skills and Web-based instruction to professional education and has received several awards for outstanding teaching, both from Yale University and the University of Washington. In addition to teaching about health politics, policy, and systems, she is director of the de Tornyay Center on Healthy Aging and is a member and immediate past chair of the consumer-elected board of trustees of Group Health Cooperative, the Pacific Northwest's pioneering health maintenance organization.

With Dr. Daniel Lessler, she co-directs a Robert Wood Johnson Foundation-sponsored curriculum project to foster collaboration between academic medical centers and managed care organizations. The project is designed to improve both health education and patient care by health care professionals. This Partnerships in Quality Education project, entitled Take Care to Learn: Teaching Clinical Care Management, focuses not only on the improvement of primary care medical education, but also on the design of new approaches to prepare nurse practitioners and medical students for collaborative interprofessional practice.

As a leader in interdisciplinary education and practice, Dr. Ward is also a core faculty affiliate of the University of Washington Center for Health Sciences Interprofessional Education, which supports interprofessional education and research across the University of Washington Health Sciences and Information Schools.

THE CHALLENGE OF REFORMING EDUCATION AND PRACTICE TO FOSTER THE DELIVERY OF PRIMARY CARE AND PUBLIC HEALTH SERVICES THROUGH INTERDISCIPLINARY TEAMS

by Bobbie Berkowitz and Debbie Ward

Introduction

We want to thank Dr. Denise Rogers and the Advisory Committee on Training in Primary Care Medicine and Dentistry (ACTPCMD) for inviting us to write to and subsequently meet with you. Let us tell you a little about ourselves to establish our *bona fides* or at least give some plausibility to our speculations. Bobbie Berkowitz speaks from the standpoint of both public policy and public health. Formerly a deputy director of the Washington State Health Department, Bobbie has several current roles, one of which is directing the Turning Point Program Office for the Robert Wood Johnson Foundation (RWJF). Turning Point is an initiative to "transform and strengthen the public health infrastructure" to enable States, local communities, and their public health agencies to respond to the challenge of protecting

and improving the public's health in the 21st century (Nicola, Berkowitz, and Lafronza, 2002). A regular visitor and consultant to the public health agencies of virtually every State, Bobbie is uniquely well informed about the public health enterprise. Debbie Ward is a nurse and has two sight lines into health care relevant to your purposes: one is as the immediate past chair of the Board of Group Health Cooperative, a leading not-for-profit health maintenance organization (HMO); the second is as co-principle investigator (PI) of an interprofessional training grant, part of the RWJF Partnerships in Quality Education program. We hope our backgrounds and various experiences make us helpful contributors to your deliberations.

The Issue

You want to address the challenges of reforming education and practice to foster collaboration and cooperation between public health and primary care. Recent public health emergencies loom large in the public consciousness (and in the motivations for opening the public purse), but as Victor Sidel, former President of the American Public Health Association (APHA) and pillar of Physicians for Social Responsibility has exhorted, the focus on bioterrorism runs the risk of undercutting the more substantive goals of public health (Sidel, 2002). These long-standing and still unmet goals include addressing multiple determinants of health, especially social and environmental factors, as well as population-centered issues in both acute infectious diseases and chronic illnesses.

Some History

Your concerns with building collaboration between the primary care enterprise and the public health enterprise have important predecessors. The RWJF launched the Medicine/Public Health Initiative near the beginning of 1994 with the goal of promoting collaborative interactions among medical and public health professionals. This initiative was the catalyst for the creation of the *Pocket Guide to Medicine and Public Health Collaborations* (Lasker, Abramson, and Freeman, 1998). The *Pocket Guide* is a comprehensive look at case studies of investments and commitments to cross-sectoral collaboration between public health and medicine.

The Medicine/Public Health Initiative was led by the American Medical Association and the APHA. These two national organizations understood that they each had a stake in improving the health of the public. They also had a stake in providing leadership to the disciplines of medicine and public health in forming alliances in practice, education, and research that would lead to new ways of facing the challenges in health and health care. Lasker (1997) proposed a set of actions oriented toward collaboration among the medicine and public health sectors based on the work of the Medicine/Public Health Initiative:

- Increase awareness and understanding of strategies for medicine and public health collaboration among medical and public health professionals.
- Legitimize the collaborative approach among health professions in medicine and public health.
- Provide the individuals practicing in the fields of medicine and public health with tools to help initiate and sustain collaborative relationships.
- Identify and address barriers to cross-sectoral collaboration in policy.

In 1996 another significant development in collaboration occurred: the implementation of Turning Point: Collaborating for a New Century in Public Health, an initiative funded by the RWJF and the W. K. Kellogg Foundations (*www.turningpointprogram.org*) (Berkowitz, 2000; Berkowitz and Thompson, 2000; Nicola, Berkowitz and Lafronza, 2002; Berkowitz, 2002). Like the Medicine/Public Health Initiative, Turning Point was built on the premise that collaboration between the public health enterprise and the multi-faceted illness care system was not merely necessary but imperative for improvement in the public's health.

The Turning Point initiative was created for the purpose of strengthening the public health infrastructure through the collaboration of the many stakeholders in the health and health care system. Public health, health care, community-based agencies, business, faith-based organizations, educational entities, and government agencies have collaborated in planning and strategic development of health system improvements in 23 States and numerous agencies throughout the Nation. To be successful in strengthening the public health infrastructure, it has become evident that leadership from the health care and public health disciplines is necessary so that true collaboration can occur. Even

more significant is the realization that the principles of collaborative leadership are important to develop and sustain public health systems change. Collaborative leadership empowers stakeholders to advance ongoing assessment of the challenges and opportunities faced by medicine and public health, to develop a shared vision of how the future of health and health care could look, and to share planning, decision making, and resources among stakeholders.

The Institute of Medicine (IOM) report *Improving Health in the Community: A Role for Performance Monitoring* (Durch, Bailey, and Stoto, 1997) also called on the many stakeholders in the health and health care system to engage in partnership opportunities. These opportunities would be aimed at the development of community-based health improvement strategies that could operationalize a broad definition of health and a comprehensive conceptual model of how health is actually produced. One of the many recommendations from this report included this strategy for education: "Educational programs for professionals in public health, medicine, nursing, health administration, public management, and related fields should include community health improvement process concepts and practices in their curriculum for preservice and midcareer students."

Given these initiatives, reports, and recommendations, what sorts of proposals might your Advisory Committee craft?

A Wealth of Professions to Collaborate

First, you have myriad disciplines on which to call. One list might include dentistry, medicine, nursing, nutrition, occupational therapy, pharmacy, physician assistant programs, physical therapy, public health, and social work. If you add bioinformatics to the list, you would have the make-up of a four-year effort in interprofessional training at the University of Washington. Originally funded by the University President's office, this group has received subsequent funding from the Macy Foundation and Health Resources and Services Administration (HRSA). The addition of bioinformatics to the list is key and may be one particular channel through which to build particularly effective collaboration, as multiple disciplines are looking to new modes and understanding of information collection and transfer. Your workgroup is specifically considering the question of how to use new technologies in fostering collaboration. Web-based curricula are one obvious example, and the collaborative effect is, of course, enhanced if such curricula are the product of interprofessional work groups.

Your workgroup asks how to accomplish role definition as multiple players are brought together. From our experience in interprofessional work, it is useful to lay out for all players the statutory and professional association language that defines each profession. But having once laid out the legal and professional boundaries, much subsequent team building is required to blur those boundaries and make true collaboration occur. The function of the team may be best established in relation to the problem being addressed (e.g., addressing diabetes or performing a community assessment). Then there is room for negotiation of roles. It is our experience that coming together around specific projects, with limited attention paid to roles and maximum attention paid to repeated opportunities to work together, has led to sincere appreciation of role variety and the now reflexive behavior of turning to colleagues for answers rather than trying to supply them all alone.

Your very committee, of course, is clearly bounded, with some professions in and others outside your legislated sphere. Your November 2001 report states that "interdisciplinary," in your language, is limited to the occupants of your silo: "The Advisory Committee wishes to stress that 'interdisciplinary' in this context means training and practice approaches involving more than one medical discipline, medical disciplines working with physician assistants, medical and dental disciplines working together, or any combination of the above" (ACTPCMD, 2001, p. 7). But for the purposes of this new round of proposed collaboration, this limitation can no longer hold. Are you enjoined from making explicit a commitment to the largest possible interdisciplinarity? Do you place your constituencies at risk of losing money from Title VII if your professional boundaries are breached?

Promising Strategies

HRSA Based

In the long term, separate silos of funding for health care professions cannot help but thwart the development of the teams long felt to be essential to improved public health and illness care. Partnerships will not be built

until these silos are opened, if not crumbled. HRSA itself recognizes this issue and has funded interprofessional projects such as a grant for Interprofessional Leadership in Patient Safety, which we now have at the University of Washington. The Request for Proposals mandated the inclusion of at least nursing and medicine in the education of faculty, who, in turn, would educate their trainees in patient safety.

Funding mechanisms that mandate interprofessional collaboration should be promoted. Just as HRSA mandated nursing and medicine to work together in the patient safety arena, so could it be mandated that training grants in primary care, for example, include community assessments carried out by collaborative groups of primary care providers and public health experts.

Potential HRSA-sponsored activities could include this sampling:

- Training grant opportunities with collaboration mandated between public health and primary care trainees, including cross-organizational planning and operations
- Short courses or institutes for public health and primary care professionals
- Epidemiology updates (or primers) for primary care professionals and evidence-based medicine or chronic illness care updates for public health professionals
- Sponsorship of the development and testing of innovative curricula in public health for primary care providers
- Funded opportunities for joint clinical work as a part of residency training, including experiences based in public health agencies
- Creation of academic health center data centers that could bank public health and health services data for joint exploration by faculty and students from multiple health professions.

OUTSIDE HRSA

In the world of private foundations, RWJF is pursuing the goal of interprofessional training in their Partnerships in Quality Education program (PQE) (*www.pqe.org*). The program office, headed by Dr. Gordon Moore, has led several rounds of funding. One was to give small amounts ($30,000 over two years) to multiple training programs for nurse practitioners (NPs) and residents. While the two professionals did not necessarily work together in the projects (which were intended to increase trainees' abilities to work in managed care settings), it did bring the program leaders together for joint awardee meetings and the subsequent fostering of collaboration. PQE later awarded larger amounts in a round of funding aimed exclusively at interprofessional groups. Debbie Ward has been a PI in both varieties: a small grant, which enabled the improved education of NP students in managed care settings and a larger grant co-led with a physician colleague. In this latter effort, the intent is to improve the care of diabetic patients by resident physicians and NP students in primary care settings. While this model does not explicitly include public health, it nonetheless models collaborative training through modest awards ($300,000 for a two-year training grant).

In arranging for our project to bring primary care medical students together in clinic settings, we have encountered multiple, on-the-ground barriers to interprofessional care. For example, the Medicare rules for resident precepting place demands on physician preceptors such that they cannot precept NP or physician assistant students in addition to resident physicians. These experiences lead us to realize that building interprofessional teams calls for boundary crossing at many levels. Whether it is ACTPCMD or some other group actively promoting collaboration between public health and health care, the following could be attempted:

- Work with professional organizations like the American Academy of Family Physicians to encourage collaboration as a professional standard of practice.
- Work with certification and educational organizations like the accrediting bodies for schools of public health to mandate collaborative experiences as a part of professional and educational accreditation.
- Work with trade associations such as the American Association of Health Plans (the large managed care trade group) to build public health consciousness into the mission of health plans.
- Begin work with the smaller trade associations of non-profit HMOs to encourage publicly minded organizations to build alliances with community and public health agencies.

Movement toward the objectives and recommendations of the initiatives we recounted—initiatives that call for the collaboration among health and health care professionals—has been slow. Clearly, there are significant barriers that must be taken into consideration.

Challenges

Several sets of challenges face the fostering of the delivery of primary care and public health services through interdisciplinary teams. One is related to the nature of the threats to population health. A second relates to the values and norms of public health and health care. And a third reflects the decentralized, acute-care focus of the majority of health care expenditures.

The responsiveness of health and health care to threats to health can be gauged in part by examining our progress on the health objectives for the Nation as described in *Healthy People 2010* (U.S. Dept. of Health and Human Services, 2000). Berkowitz, Ivory, and Morris (2002) reviewed the *Healthy People 2010* document for those objectives for which the health status data showed a decline away from the target goals. The results of this review included a number of indicators that require a system-wide approach for improvement e.g., asthma in African Americans, blood lead concentration, and maternal mortality rates. A system wide approach, as suggested by the IOM Report *Improving Health in the Community* (Durch, Bailey, and Stoto, 1997) would begin with a coordinated assessment at the community level to determine the populations at risk, the extent of the problem, and opportunities for improvement. Such examination of community health status can best be done by an interdisciplinary team having expertise in population health, prevention strategies, and clinical management of acute and chronic disease. An interdisciplinary team of public health and primary care providers having the training to examine community health status and develop evidence-based strategies for improvement partnered with community members could make a powerful contribution to managing these national objectives.

The values and norms of public health and health care represent potential barriers to creating these kinds of interdisciplinary teams. Integrating functions among public health and health care systems, such as data collection and analysis and managing population health status, has made limited progress. The integration and interaction of public health and health care would be most useful at the community level. Halverson, et. al., (1997) have developed a model for how this integration might occur. The authors recommended that opportunities be developed in which health plans and public health can exchange knowledge and expertise and form alliances to deliver health services to a defined population. Welton, Kantner, and Katz (1997) noted, however, that these types of models face challenges because of differing perspectives between public health and health care, such as a conceptual gap between primary care physicians and public health professionals related to practice, critical health problems, and the focus of interventions.

Additionally, critical barriers exist at the policy and financial levels. The financing mechanisms of U.S. illness care are growing in their perversity. The predicted move to defined contribution is not yet taking place, but the retreat to fee-for-service (although discounted) is rapid and provides a strong underpinning for a system of professional silos and uncoordinated care. The growth of boutique medicine, the disproportion of resources spent on pharmaceuticals, and the continuing anachronism of an acute-care modeled system all point to the difficulties in achieving focus on the health goals of the Nation.

This makes your job both harder and more urgent. We hope we can be of some assistance in your deliberations.

References

Berkowitz, B. (2000). Collaboration for health: Models for State, community and academic partnerships. Journal of Public Health Management and Practice, 6(1).

Berkowitz, B. (2002). Commitment to collaboration. Transformations in Public Health, 3(3).

Berkowitz, B., Ivory, J., and Morris, T. (in press), Rural public health: Policy and research opportunities. Journal of Rural Health.

Berkowitz, B. and Thompson, J. (2000). Turning Point: Responding to the challenges in public health. Washington Public Health, Vol. 17.

Durch, J., Bailey, L., and Stoto, M. (Eds.) (1997). *Improving Health in the Community: A Role for Performance Monitoring*. Washington, D.C.: National Academy Press.

Halverson, P., Kaluzy, A., and Young, G. (1997). Strategic Alliances in Healthcare: Opportunities for the Veterans Affairs Health Care System. Hospital Health Services Administration 42 (3): 383-410.

Lasker, R. (1997). *Medicine and Public Health: The Power of Collaboration*. New York: The New York Academy of Medicine.

Lasker, R., Abramson, D., and Freedman, G. (1998). *Pocket Guide to Cases of Medicine and Public Health Collaboration*. New York: The New York Academy of Medicine.

Nicola, B., Berkowitz, B., and Lafronza, B. (2002). A turning point for public health. Journal of Public Health Management and Practice, 9(1).

Sidel, V. Bioterrorism and Public Health. Lecture, University of Washington Health Sciences Center, April 8, 2002.

United States Department of Health and Human Services (2000). *Healthy People 2010.* Washington, D.C.

United States Department of Health and Human Services, Health Resources and Services Administration, Advisory Committee on Training in Primary Care Medicine and Dentistry (2001). Comprehensive Review and Recommendations: Title VII, section 747 of the Public Health Service Act. Report to the Secretary of the U.S. Department of Health and Human Services, and Congress.

Welton, W., Kantner, T., and Katz, S. (1997). Developing tomorrow's integrated community health systems: A leadership challenge for public health and primary care. The Milbank Quarterly, 75(2): 261-288.

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

STRATEGIES TO ADDRESS ACUTE AND CHRONIC PUBLIC HEALTH ISSUES THROUGH PRIMARY CARE PROVIDERS

BIOGRAPHY

Dr. Nicole Lurie is a senior natural scientist and the Paul O'Neill Alcoa Professor of Health Policy at the RAND Corporation. Prior to that post, she had a long affiliation with the University of Minnesota, where she was professor of medicine and public health, and most recently, medical advisor to the commissioner at the Minnesota Department of Health. From 1998-2001, she took a leave of absence to serve as Principal Deputy Assistant Secretary of Health in the U.S. Department of Health and Human Services. Dr. Lurie has a long history in the health services research field, primarily in the areas of access to and quality of care, managed care, mental health, prevention, and health disparities.

Dr. Lurie attended college and medical school at the University of Pennsylvania and completed her residency and MSPH at UCLA, where she was also a Robert Wood Johnson Foundation Clinical Scholar. She serves as senior editor for *Health Services Research* and has served on editorial boards and as a reviewer for numerous journals. She has served as council member and president of the Society of General Internal Medicine, is currently on the board of directors for the Academy of Health Services Research (AHSR), and has served on multiple other national committees. She is the recipient of numerous awards, including the AHSR Young Investigator Award, the Nellie Westerman Prize for Research in Ethics, and the Heroine in Health Care Award. She is also a member of the Institute of Medicine.

In addition to her work in health services research and health policy, Dr. Lurie continues to practice clinical medicine in the health care safety net.

STRATEGIES TO ADDRESS ACUTE AND CHRONIC PUBLIC HEALTH ISSUES THROUGH PRIMARY CARE PROVIDERS

by Nicole Lurie

Introduction

For over two decades, health and public health professionals have struggled with ways to create a better interface between medicine and public health. Numerous challenges have been issued, and numerous programs have been implemented. Schroeder and Showstack challenged academic health centers to become more responsive to the health needs of their communities, and that challenge was embodied in the Health of the Public Program.[1] The American Public Health Association and the American Medical Association, among others, formed the Medicine and Public Health Initiative. Social medicine programs, primary care training programs, and a variety of nursing, pharmacy, and other health professions programs have all tried to train professionals with dual responsibilities to populations and individual patients and to function at the interface of care of individuals and of what most consider to be public health.

These efforts are not without their successes. Training of physicians has become more primary care and outpatient oriented, and many medical schools now incorporate a population health perspective in their curricula. Simultaneously, the practice environment has been changing. Interdisciplinary training and practice are more common, although they continue to be slow to evolve. More providers practice in group practice

settings and as part of managed care organizations. Both providers and health systems have been held increasingly accountable for improving preventive care and maintaining the health of populations of patients in addition to individuals, and they have risen to the challenge, however incompletely.

However, all is not well with primary care and public health. The terrorist attacks on the United States and the anthrax incidents that followed highlighted the continued disconnects between the public health and health delivery system. The public health system was, in itself, unprepared to respond to many aspects of the crisis, and this lack of preparedness highlighted the degree to which the infrastructure was ill equipped to perform basic functions of surveillance and health protection. The health care delivery system was only partially challenged by these episodes because relatively few people required acute care. There were few survivors of the World Trade Center attacks and, although highly publicized, few cases of anthrax. Surge capacity, disaster response capability, and provider preparedness were (fortunately) not tested. Nonetheless, it became clear that, on a systems level, not only is our public health system in disarray, but it is not well linked to the delivery system. Communication between health and public health systems was often poor, and reliable information was often impossible for providers to obtain. These events left us with a number of challenges and opportunities and with what is likely a small window of time in which to build upon the increased attention devoted to these issues.

This meeting discusses "strategies to address acute and chronic public health issues through primary care providers" in the context of training. This issue is not new. The mere fact that it needs further discussion after so many years of educational reform suggests that we need a new approach. In this paper I review opportunities for primary care and public health training in the health professions education process and describe the kinds of "acute and chronic public health issues" that could be addressed in either training or practice. I then identify some attributes of practices that might lead to a better interface, and I note some opportunities for change. Although much of the literature addresses the training of physicians, this paper is not intended to focus only on medical practice, but to serve as a basis for broader discussion.

The Primary Care Training Process

Simply stated, there are four major periods during which education can have an impact upon the public health awareness of physicians: prior to medical school, during medical school, during residency and specialty training, and through lifelong learning while in practice.

As recently as a decade ago, some students entering medical school were unable to type or use a computer. This situation has dramatically changed. Similarly, many students entered medical school with little awareness of or experience with working in the health delivery system. This too has changed, particularly as public health experience and even coursework are seen as desirable attributes of successful applicants. This phenomenon highlights the opportunity for the admissions process to influence the public health preparedness of entering students: preferential treatment could be given to applicants with public health background or experience, or matriculating students could be required to complete coursework or field experience prior to their first year.

To some degree, this public health preparation is happening already; many medical students matriculate having completed a public health degree. While, on the surface, such exposure seems like a promising avenue for increasing public health orientation of physicians, we are not aware of data to suggest that these students behave differently in practice than those who have not had such training or exposure. Further, we note that even if students enter medical school with a greater public health orientation, there has been little in the way of systems change to incent or sustain such behavior, either in residency training or in the practice environment.

Undergraduate health professions training (i.e., medical, nursing, dental school) offers the next opportunity to increase the public health orientation of emerging primary care providers. Without question, most medical schools have incorporated primary care and population health curricula, ranging from coursework to training and community/public health projects. Medical students spend more time in ambulatory settings now than in any time in recent history. However, it is the rare practice setting that participates in surveillance, has electronic links to a health department, or places emphasis on a major public health concern in the community.

Thus, while students may be predisposed to consider public health perspectives, they rarely spend significant time with role models who are doing so.

The idealized primary care preceptor is someone who has broad knowledge and excellent communication skills, runs an efficient practice, is a lifelong learner, and has in place at least basic quality assurance tools (such as preventive care reminders). The occasional provider might participate in a practice-based research network in which data are reported, collected, and analyzed. However, precious few role models work in a health department, have a functional system for reporting reportable diseases, have electronic links to hospitals or health departments, or have disease registries in their practices. Hence, students are rarely exposed to preceptors whose behaviors link public health and clinical practice.

Numerous programs have placed students in public health settings for rotations of varying lengths, and the Centers for Disease Control and Prevention (CDC) has run a program for medical students based on the Epidemic Intelligence Service (EIS) model.[2] In a number of programs, students have earned MPH degrees while in medical school. Calls and e-mails to several prominent programs as well as to the CDC failed to uncover outcome information about what such learners are actually doing in practice.

Residency remains largely unchanged. It is a time of steep learning curves, time pressure, and sleep deprivation. Although residents spend more training time in ambulatory settings, they face the same paucity of role models as students and are themselves ill prepared role models for undergraduate students when it comes to public health. Despite the evolution of evidence-based medicine, public health is still seen as the "soft stuff" in most teaching settings, especially when compared to impressive rescues in intensive care units and highly sophisticated procedures. Most hospitals do not themselves fulfill the kinds of public health responsibilities we are considering, so, again, the sites in which people learn in residency are not modeling the kinds of behavior we wish to produce.

The final opportunity to impact the public health perspectives of providers is when they are in practice, hopefully as lifelong learners. Here, providers might benefit from new educational experiences or from the influence of the public health responsibilities of the systems in which they practice. Alternatively, they may become part of a practice-based research network (PBRN) in which they are expected to track and report certain conditions or treatments. Two recent reports provide some encouraging evidence about practice settings. One indicates that some sentinel managed care organizations have higher rates of reporting chlamydia than the historical rates of private practitioners, suggesting that systems approaches may be successful in this regard.[3] The other suggests that sentinel physician networks and PBRNs could be effective vehicles for fulfilling public health responsibilities.[4] However, the glass is only half full; most health plans have not yet achieved the performance of the sentinel plans studied. Data from PBRNs suggest that increased time pressures decrease the reporting rates from these practices, raising concerns that effective surveillance based on such networks could fall apart during a crisis or when increased productivity is demanded.

In sum, the trajectory from preprofessional education to practice provides both latent and realized opportunities—required curricula, required projects, clerkships in well functioning systems or in health departments, and ambulatory rotations in practices that actually "do" public health. While these training methods present opportunities, evidence of long-term impact of such programs on practice behavior is lacking.

What Are the Acute and Chronic Public Health Issues We Wish to Address?

While recent events have focused us on infectious disease surveillance, acute and chronic public health problems have been with us for some time. Prior to considering further changes to health professions education, we should seek to define the kinds of public health issues we wish to see addressed in primary care. Is our goal that primary care providers will take a population perspective, by which we most often mean understanding the patient and his/her problem in the context of the epidemiology of disease and the community and culture in which he or she lives? Do we mean getting better at primary, secondary, and tertiary prevention in primary care practice? Clearly, we have made great strides in each of these areas. Rarely have these successes come through the efforts of individual practitioners—rather, they have been achieved through the twin drives of health system accountability and quality, both of which have resulted

in the development and use of systems to achieve the desired outcomes.

Or are we talking about participating in surveillance or disease registries? If so, is such participation time sensitive, or can it rely on retrospective or delayed reviews of claims of billing information? Would the reporting process require a physician to master a complicated new technology, or could the process be made user friendly and largely error proof? A mechanism with built-in delay may be easier for primary care practices to handle and may be more than sufficient to develop an asthma registry or a surveillance system for heart disease, diabetes, or injury. It may even be sufficient for much infectious disease reporting, such as for TB, HIV, or STDs. It is not sufficient, however, when it is important to detect a "signal" event rapidly or when quick reaction times are needed, such as in the case of a terrorist incident with biological, chemical, or nuclear threats.

Two other responsibilities of primary care practitioners include staying up to date and remaining ready. Both are important in considering acute and chronic health problems and become even more relevant in considering terrorist incidents. Current systems encourage neither. Continuing medical education as a mechanism to change practice behavior has repeatedly been shown to be ineffective, although requirements for effective learning have been defined. Even without time pressure, many providers are unable to access real-time reliable information, such as practice guidelines when a patient is in front of them. Determining how to evaluate and treat a case of suspected anthrax requires ready access to state-of-the art information, especially in a rapidly changing environment.

A final dimension of practice is quality. The quality literature compellingly demonstrates the importance of system change and of highlighting a volume-outcome relationships.[5] The latter is particularly salient as we consider the health security context in which clinicians are expected to deal with relatively rare events for which a state of continued preparedness and suspicion is required. A challenge will be to practice in cost effective ways while deciding which hoofbeats represent more than horses. Currently, there are no widespread primary care models that maintain readiness or that use hypothetical practice situations to prepare for an unknown reality. Disaster drills by first responders and emergency care providers are as close as we come; primary care providers are usually excluded from or are too busy to participate in such exercises.

What Attributes of Practice Might Lead to Better Public Health-Oriented Behaviors?

The health services literature provides some insight regarding both the practice of prevention and provider behavior change.[5] First, it suggests that both are more likely to occur when we do not rely on the behavior of individuals, but instead implement systems and processes that facilitate such practice. Examples include computer-generated reminders, standing orders for nurses to administer flu shots, and a "vital signs" stamp to encourage smoking cessation. Increasingly, team-based care is becoming essential to such systems. Second, feedback regarding practice patterns, reporting results, and quality improvement mechanisms lead to improvements in preventive health practices. Electronic medical records and embedded decision support are key elements of such systems.

In the domain of reporting, at least two practice attributes seem essential. First are the motivation and time to report (assuming a diagnosis is made). PBRNs provide encouraging models in this area, although, as discussed above, data indicate that completeness of reporting is diminished when providers are busy. As we do not foresee a time when providers are less busy and, in fact, they could be even more time pressured in the event of an epidemic, this issue should be taken seriously.

Second, automated systems that are able to detect "signals" or prompt providers to report will also be key. These systems will need to be built "around the practice" rather than requiring the practice to adapt to them and should not require new behaviors (even additional keystrokes for data entry), if possible. Unfortunately, many of these systems are still in the experimental stage.

Third, financial incentives have consistently been demonstrated to change provider behavior. Other than the provision of "bonus payments" for achieving high rates of preventive care, we are as yet unaware of financial incentives that have been developed to encourage disease reporting, either for acute or chronic disease, or to encourage any other public health-oriented behaviors.

Finally, the legal and regulatory system in which practice exists has been demonstrated to change behavior. This context may provide some additional opportunities to improve public health behaviors, although it is not likely to lead to short-term improvements.

Where Are Opportunities?

As the focus of this conference is education, it seems logical to examine opportunities in the educational process. However, given the history of educational efforts, these may not be the right venue for change. Furthermore, evidence regarding system change demonstrates clearly that training (or interdisciplinary collaboration) without incenting and sustaining system change is likely to fail. Hence, the remainder of this section identifies areas in which new activities may afford opportunities for success.

Information systems: Improved information systems will be the backbone of quality improvement and public health preparedness. Having an Internet-linked computer in every practice site should become a condition of participation in Medicare or should be a requirement for licensing. This regulatory approach can be supplemented by decision support tools for practice (leading to improved quality and increased preventive behaviors) and will ultimately support opportunities to improve surveillance. It will also increase the likelihood that providers can access real-time, reliable information in the event of a public health crisis. To be maximally effective, clinical and public health information systems will need to be linked.

Educational opportunities: Education aimed at learning new information and keeping current will be essential. These educational opportunities should be learner centered and competency based and should use well established principles of adult education. System incentives should be developed to make such education desirable. Failing that, some level of competency-based education could be a condition for license renewal or accreditation within a health system. Such education could build, in part, from the information technology backbone and could serve as the basis for the practice required to maintain a ready state of awareness.

Practicing primary care physicians, especially those who are key opinion leaders in their communities, could have opportunities for experiential learning in health departments. These activities will need incentives and system support, as it is difficult for most providers to leave their practices. For example, they might be supported by *locum tenens* arrangements paid for through public health funds and tied to training-the-trainer commitments. If implemented, such programs should be evaluated to determine whether they achieve the desired effect. Similarly, individuals who practice in public health departments could do "rotations" through primary care practices to better understand the culture and opportunities of those practices and to enhance interpersonal relationships. Experiential learning opportunities for students, residents, and faculty could be enhanced, although data on experiential learning indicate changes in attitudes. Whether they lead to other desired behaviors, is unclear. If these efforts are to bear fruit, they must be supported by changes in the practice environment that support such behaviors.

Outcomes of joint degree (MD/MPH) programs should be evaluated to determine whether they are meeting desired objectives and to see if appropriate changes to these programs should be made in the spirit of continuous quality improvement. Similar efforts should be made with CDC programs aimed at student and resident learners.

Learners Need Environments that Model Appropriate Behaviors and Attitudes

Attributes of primary care practices and hospitals that appropriately link practice and public health should be defined. All teaching hospitals should implement such practices, both for better public health practice and for assuring that learners (students and residents) are learning in settings that model the appropriate behavior. Hospitals able to achieve excellence in this area might be designated "magnet hospitals for public health," much like those hospitals that have achieved excellence in nursing care. Similar efforts should be undertaken for ambulatory training sites. It is likely that in each case, these efforts can develop from the infrastructure already in place to support quality improvement efforts.

Primary care practices will need to have systems in place to support increases in public health behaviors. Information technology is key and has already been discussed, and additional means of support should be explored. Models of practice organization to support

public health practices (that are not linked to individual patients) will need to be developed and will likely require interdisciplinary teams for surveillance, reporting, and follow-up. For example, an individual in each practice could be responsible for readiness exercises or for assuring the execution of the reporting function (even if automated). All systems will need to develop mechanisms of accountability, which will likely involve feedback regarding performance from public health departments. Mechanisms to finance such systems will need to be developed, or they will fail. Whether primary care visit reimbursement should incorporate support for these functions or whether other mechanisms should be developed should be the subject of debate. Regardless, application of quality improvement methods to improve preventive care has been shown to be successful, and the potential to use them to expand public health preparedness should be investigated. Consideration should also be given to recent trends in primary care. Currently, applicants for primary care training programs are at an all-time low. Increased responsibilities for primary care providers, without appropriate support, could have the unintended effect of making primary care practice even less desirable.

Efforts to expand the public health awareness of physicians in practice are not new. Training and education over the last two decades has enabled us to "talk the talk." Without appropriate incentives and comprehensive systems change to promote public health behaviors in practice, further educational efforts are not likely to get us to "walk the walk."

References

[1] Showstack, J., Schroeder, S., et al. Health of the public. The academic response. Health of the public mission statement working group. JAMA. May 1992. 13; 267(18): 2497-502.

[2] http://www.cdc.gov/eis

[3] Centers for Disease Control and Prevention. Reporting of laboratory-confirmed chlamydial infection and gonorrhea by providers affiliated with three large managed care organizations—United States, 1995-1999. JAMA. 2002 April 17; 287(15): 1933-4.

[4] Nutting, P.A., Beasley, J.W., Werner, J.J. Practice-based research networks answer primary care questions. JAMA. 1999 Feb 24; 281(8): 686-8.

[5] Institute of Medicine. Committee on Quality of Health Care in America. Crossing the quality chasm: a new health system for the 21st century. Washington, DC: National Academy Press; 2001.

APPENDIX B: WORKGROUP A – IMPROVING ACCESS

WORKGROUP MISSION

Address how to train primary care providers to improve access to unified, interdisciplinary public health services in underserved rural and urban communities

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE & DENTISTRY MEETING

May 13-14, 2002

WORKGROUP SESSION A

WORKGROUP LEADER

Douglas Campos-Outcalt, M.D., M.P.A.

ADVISORY COMMITTEE PARTICIPANTS

Billie Wright Adams, M.D., F.A.A.P.
Ruth M. Ballweg, M.P.A., P.A.-C
James J. Crall, D.D.S., D.Sc.
Ryan J. Hughes, D.D.S.
Harry J. Morris , D.O., M.P.H.
Joseph E. Scherger, M.D., M.P.H.

WORKGROUP CHARGE FROM THE ADVISORY COMMITTEE

Workgroup A will address *how to train primary care providers to foster improved access to unified, interdisciplinary public health services in underserved rural and urban communities* (should include interdisciplinary programs that stress collaboration to meet goals). Issues to be considered include the following:

a) What is the role of training programs in improving access?

b) How should curricula/programs be designed and/or expanded?

c) What successful models and examples of community-based activities should be examined that meet the need of improving access by combining primary care education and training with public health?

d) What changes in faculty structure and overall infrastructure might be needed to design, develop, and/or expand such programs?

e) What are the barriers to accomplishing this objective? (e.g., payments to residents only in hospital settings, etc.).

f) How should primary care training programs provide education that will focus on public health considerations relating to improving access?

Summary of Workgroup A – Improving Access

The Charge

Following introductions of Workgroup members, this group examined their charge: *how to train primary care providers to foster improved access to unified, interdisciplinary public health services in underserved rural and urban communities*. The group decided to address all parts of the charge, focusing on the overall objective of education programs to foster improved access, to go beyond traditional notions of clinical training that takes place in a community setting, and to incorporate more sensitization to existing barriers to access and leadership training.

Access: Graduate Outcomes and Programs' Provision of Care

Discussion ensued regarding the definition of "improving access," whether it entails training people to go out to work in areas needing improved access as well as access provided through the training program itself. The group agreed that improved access includes both. Although Title VII, section 747 programs are being evaluated based on graduates who eventually work in underserved communities, the programs themselves are points of access for health care. In fact, programs improve access by providing students with opportunities to work with diverse or underserved populations. Otherwise, training would be less effective when graduates go out to provide care to underserved communities or populations.

One group member mentioned California's medical education program funded by Song/Brown legislation. Studies have documented the amount of real-time care provided by residency programs to California's underserved populations. Although studies discussing outcomes of health professions graduates have suggested mixed results regarding percentages of graduates who work with underserved communities and populations, the educational programs themselves are serving the underserved, and those programs are perhaps the ones that are most dependent on receiving grant money for educational enhancement.

This provision of care by the programs themselves gets little attention and has not been used as a defense for Title VII, section 747. One member noted that service provided by programs might not be stressed because funding emphasis in primary care has been pre-residency, yet residency programs probably provide the most direct care. On the other hand, for dental programs, most Title VII funding goes towards residency programs, although many dentists go directly into practice and bypass residency.

A physician assistant faculty member noted that physician assistant programs also provide a good deal of direct care to underserved populations because of required rotations in underserved clinics. In fact, providing care is an incentive for receiving federal grants.

Role of Training Programs in Improving Access

The group discussed the role of training programs in improving access, especially in improving access on a long-term basis. A dental representative in the group noted that many factors affect access and influence the marketplace but are beyond programs' control. Another observed the perceived discrepancy of having 40 percent of graduates who work in underserved areas being compared to 100 percent of the National Health Service Corps who practice in underserved areas. The latter, observed another, have only a two-year requirement for such service. Another member noted an additional complicating factor: international medical graduates serve in underserved areas to satisfy immigration requirements; thus, these students affect quantitative outcomes. However, she added, once those requirements are met, these graduates do not necessarily remain in underserved areas.

Importance of Admissions

One member stated that probably the most important factor determining whether graduates work in underserved areas is the population admitted to the program. A number of clinics—homeless clinics and other clinics for underserved populations—have been started by the energy of medical students reaching out to the underserved. The question was raised about whether such experiences could be tied to Title VII because much energy is present in medical students at the pre-resident level. This member also mentioned that, from his experience, residents who serve underserved populations during residency appear to want to finish residency so that they can serve a different population. Only those residents truly committed to caring for the underserved continue their residency experience into their practices. Programs could do a better job of selecting residents who want to remain in underserved areas.

DEFINITION OF THE UNDERSERVED

The group discussed the issue of how the definition of "underserved" is closely related to the measures used to evaluate successful outcomes. One member noted that suggestions have been made to look at the underserved as population-based, not geographic, so that provider service to Medicaid patients or those supported by public programs can also be considered in outcomes.

Another member added that the definition of "underserved" needs to be the most liberal possible and mentioned a Philadelphia clinic that failed to qualify as serving an underserved area because it was only a mile from a major medical center, yet no other provider was available to serve that particular community. Another noted that without emergency rooms in the teaching hospitals, a void would exist in health care in some communities, although a primary care setting could easily address that community's needs.

MORE COMPREHENSIVE RANGE OF PROGRAM SERVICES/EXPERIENCES

A pediatric primary care Committee member noted that more experiences were needed in primary care, that programs that had specialties often referred out problems that primary care providers could address. Programs should designate themselves as primary care and be more complete in providing primary care training.

MORE FACULTY ROLE MODELS PRACTICING COMMUNITY-BASED MEDICINE

The group discussed at length the issue of the importance of providing role models for students. One member noted that in some programs, the physician who is out in the community, who has no teaching affiliation, is not considered to be a model for educational purposes. In fact, training programs are often isolated from clinicians who may be providing first-rate delivery of services to the community. Programs should selectively identify available, willing primary care providers who practice quality care.

Another member noted that being a role model has become more difficult during recent years. He added that not only managed care but also primary care has been under pressure to see more patients and do more paperwork than in the recent past. Health care providers are struggling with an old model to do a new job. Several group members noted that students pick up very quickly on how disgruntled the workforce is.

NEED FOR DEVELOPMENT OF MODELS BY PROGRAMS

One member mentioned that if primary care was identified as the specialty leading the way in training—that is, providing very practical information tools—those who gravitate to this specialty could use these tools "robustly in caring for communities" and could generate excitement in primary care.

The group then addressed the issue of whether training institutions should find models and help students connect with them or whether the programs should develop those models. One member stressed the need to develop models and added that an area for Title VII grants should be developing curricula using information technology to improve care. A Committee member made the point that, because of productivity pressures, primary care faculty at training institutions are not leading the way in developing new practice models.

NEED FOR CULTURAL COMPETENCY

The group began discussing needed competencies to increase access, and one Committee member mentioned the need for cultural competency so that practitioners who go into underserved areas are comfortable serving in those areas. The question arose regarding whether students need specific courses or whether they develop cultural competencies by serving in such areas.

One member stated that cultural competency should be part of curriculum and that students must have some experience in cultural competency. Faculty also need that training. Faculty development in cultural competency is more important than ever before. This Committee member stressed that many faculty are not from communities such as inner city underserved areas and may have no experience in addressing minority or disadvantaged populations.

A dental Committee member added that cultural competency, at least in dental education, is more modular, packaged through role playing and artificial situations as opposed to real-life experiences, which is what a Title VII training program can provide.

The group leader observed that didactic training is modeled experientially in the clinic: students might learn about heart failure didactically and then go into the clinic to see how to respond to it. Cultural competence probably should be handled similarly, that is, with both didactic and applied training.

The pediatric primary care Committee member agreed and suggested that cultural competence training should also be interdisciplinary. Most often, training is focused on the direct provider, but others, such as social workers, need to be involved as well. Interdisciplinary training could also be part of curricula.

The discussion evolved to examples of programs that could be models, and one group member mentioned that having a diverse student body would help solve some of the problems, but most programs have a non-diverse student population. This physician assistant faculty member noted that some physician assistant programs, to win grants, require that a certain percentage of their admissions committee be of diverse background or have experience with working with underserved populations.

Discussion ensued about how programs could best address cultural competency. A Health Resources Services Administration (HRSA) representative mentioned that HRSA's outcome measures include measures of minority and disadvantaged students entering the program as well as minority faculty. Programs that increase those percentages come closer to the target outcomes. The measures currently pertain to graduates who go to underserved areas. Only for new programs is the population served considered. A more problematic issue that is not measured concerns the length of time graduates remain in those areas.

Design and Expansion of Curricula/ Programs

The group moved to the second part of their charge: "How should curricula/programs be designed and/or expanded" to address the public health/primary care gap? What should programs do to increase the public health/primary care interface?

Population-Based and Community-based Approaches

One Committee member mentioned that he would like to see community-oriented primary care practitioners, that is, have primary care providers who make community diagnoses and address problems on a community level. He added that "population-based medicine" is a new label for a similar perspective. He also noted that as a family practitioner with an MPH, he was concerned with obesity epidemics and other issues in *Healthy People 2010*. He stressed that the inherent interface of primary care and public health is much better than attempting to merge two disparate cultures.

Interface through Teaching Healthy People 2010 *and Health Indicators*

This Committee participant added that, rather than injecting public health training into a primary care program, it would be better to use principles of community-oriented primary care or population-based medicine so that the primary care workforce would be more involved with health indicators at the community level. He mentioned his own experience as a small-town provider who educated the local junior high school about AIDS prevention, conducted smoking education, and addressed general priority issues of the community. Working with public health officers was not a pertinent issue for him because he was located in an area remote from the county health department. He stressed that primary care programs should probably be focused at the level of teaching *Healthy People 2010* as a way to bring primary care and public health together.

Curriculum Reform to Address Community Needs

A visitor from the National Institute for Dental and Craniofacial Research at NIH mentioned a model being used by the Robert Wood Johnson Foundation project to introduce dental students to public health early in their training. Applicants for these grants must integrate public health courses into their curricula, and students must spend 60 days in community clinical experience. She stressed that by the time trainees graduate, if they have not been exposed to underserved communities and disadvantaged populations, they may not want to make lifestyle changes to serve in those communities. She also added that dental schools are becoming accessible only for the affluent because of both cost and student selection and that many schools no longer have a community health program or staff. She believes that admissions, curriculum—both didactic and experiential—and role models all need to come together to increase the public health orientation of dental training.

A HRSA representative mentioned the Meharry Medical College's purchase of an inner-city hospital. The College's need to serve the population of that community is driving reform of the curriculum to incorporate public health because trainees and faculty must relate to the community.

The question was raised regarding how training institutions should acquire faculty who have those kinds of community experiences. One dental member believed that institutions should incorporate faculty with community-oriented approaches incrementally. The

perfect faculty role model probably does not exist. At the same time, if trainees receive public health training, but fail to observe it being applied by practitioners in the field, they will assume that their training was wasted. He added that residency might be the best venue for developing public health orientation because residents serve in communities. Developing an infrastructure at the residency level and bringing it down to the pre-residency level may be the most effective strategy.

One member mentioned that for his own program in Iowa City, Iowa, the curriculum is not so much the issue. Residents serve in an urban setting and see a diverse faculty treating patients. With a diverse faculty, race is less visible to residents and is perceived as a non-issue in medicine.

Access as Part of a Larger System Problem, not just Point of Access

The group leader wondered if public health/primary care and access are two separate issues or whether they are linked. Is public health training necessary to increase access? One group member stated that introducing population-based health as a focus of training is important if we expect to make a difference in the way people view their careers. Another added that access has a public health dimension, not just a primary care dimension. He mentioned a primary care physician in West Texas who has an open door policy and is faced with the economic realities of having a 60 percent Medicaid patient population and trying to meet overhead. Economics is a negative driver, but training can affect someone's commitment regarding which patients they will or will not see. Another Committee member added that students are forced to make those decisions when they come out of school with massive debt. How much public health or access burden can someone handle on top of education debt and a car payment?

One member observed that, in her community, finding dentists who serve children funded by Medicaid is difficult. Her State has a low reimbursement rate, and attempts to make reimbursement equal to those of other States have been unsuccessful. Another wondered if Title VII could be a catalyst to approach this larger problem: to help practitioners think of themselves as part of a system and to help them understand their community resources.

The group leader observed the large difference between the practitioner who is a sole provider in a community and one who is not. He added that in an urban setting, the underserved have anonymity, but in a rural area, the underserved would be obvious, and the one who fails to serve them would also be apparent.

One group member mentioned the reality of communities that lack health care—programs that are closed, public health clinics that do not provide direct patient care. She stressed the need to incorporate a component of training to help people want to go out and provide real primary care.

Need for Development of Social Consciousness

The discussion evolved to whether the development of a social consciousness is really what is at issue. One member noted that although economics is important, attitude is critical. He added that if medical training focused on the *Healthy People 2010* initiatives, then potentially public health and medical/dental sectors could begin to operate in the same space without merging.

Although much discussion addressed bioterrorism, an even more serious crumbling of the public health infrastructure is likely to occur. The group leader noted that the bioterrorism phenomenon is interesting because everyone assumes that the important thing is detecting the first case and then intervening to prevent a massive outbreak. However, our food is also vulnerable, not only to someone tampering with it, but also to food-handling mistakes. For example, several primary care providers detected salmonella, and then someone noted that the people with the salmonella were all drinking orange juice from the same manufacturer. Creating bridges to solve such problems is what population-based medicine is all about.

Opportunities for Interface between Public Health and Primary Care Medicine/ Dentistry

One group member noted that we could see public health as a big circle and primary care/dentistry as another, and the Venn diagram brings them together. What is the common center that Title VII, section 747 can focus on?

Community Public Health Experiences for Trainees

One Committee member mentioned the Family Practice Residency Program at Lehigh Valley Hospital. Every resident class has to do a major Community Outreach Partnership Center (COPC) project, and each resident has to do an individual research project as well.

The projects involve topics such as domestic violence, violence prevention, tobacco, or obesity in the community. The residents take pride in the outcomes of these projects and are enthusiastic about this work, which is clearly meaningful for them. Another member pointed out that they have gone beyond the didactic approach and carried out an experiential response to a problem, so if presented with the situation again, they have a different way of approaching it.

DEVELOPMENT OF SYSTEMS THAT AUTOMATE DETECTION AND SURVEILLANCE

A Committee member noted that most training programs fail to address public health at all. Many trainees do not even know which diseases are reportable. The labs do the reporting for physicians. Another member noted that because of a host of issues that may accompany identification of patients with reportable diseases, the physician prefers not to do the reporting. The problem, he noted, is with information management, which does not work well if a human being has to do it. He anticipated the advance of delivery systems so that the quantification and reporting of certain information is automated.

JOINT RESEARCH AGENDAS FOR SCHOOLS OF PUBLIC HEALTH AND SCHOOLS OF PRIMARY CARE MEDICINE, PHYSICIAN ASSISTANTS, AND DENTISTRY

The group leader mentioned that faculty of schools of public health and colleges of medicine and dentistry should work together to develop systems to meet the needs of both. One group member noted that before 9/11, the public health world had been moving towards chronic disease intervention, and primary care needed to move there as well, to redesign its care model because it has been based more on acute care. But now we are moving back to an acute care model, and the two models are different.

The group leader acknowledged the difficulty of finding a dual use for bioterrorism and chronic disease prevention, a problem facing the public health community if so much funding goes into bioterrorism. He is concerned about planning for and training students to be in systems that may never occur. If the systems are separate, maybe the best use of money is to help the two disciplines find ways to make the systems work better together.

One group member noted that, unfortunately, rarely did programs even in the same university work together. Perhaps resident programs might go out into community settings, but most disciplines fail to collaborate. Another member mentioned that various models exist in which the notion of "interdisciplinary" has meant health care training for everyone, but then individuals go back to their silos. No good models exist in which interdisciplinary programs have been put together well.

The group leader observed that although public health faculty and clinician faculty might work together for research purposes and design systems that could benefit both, interdisciplinary educational practices have many impediments, including time schedules, different buildings, and different accreditation standards.

Joint research endeavors, a physician assistant faculty member observed, might work, depending on who picks up the indirect costs, but it is difficult to cross boundaries and collaborate because of logistics such as costs.

One member added that silos tend to be populated with like-minded people or those with traditional mindsets. Title VII, section 747 money will not greatly affect those boundaries, but may stimulate some experimentation. Some discussion ensued about the potential for reformulating primary care funding and the need to increase funding dedicated to Title VII, section 747.

Public Health Competencies for Primary Care Medicine/Dentistry Education

The group arrived at a list of core competencies that every clinician needs:

- Immunizations
- Surveillance
- Relationships with local, State, and Federal agencies, including the Occupational Safety and Health Administration (OSHA)
- Management of illnesses such as sexually transmitted diseases, tuberculosis, and food-borne illnesses
- Reporting reportable diseases and conditions
- Management of animal bites
- Accurate reporting of vital statistics (e.g., completing a death certificate)
- Referrals to community resources
- Roles in emergencies and disasters
- Evidence-based prevention recommendations

APPENDIX C: WORKGROUP B – INTERDISCIPLINARY TEAMS FOR PUBLIC HEALTH

WORKGROUP MISSION

Address how to train primary care providers to foster the delivery of primary care and public health services through interdisciplinary teams

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE & DENTISTRY MEETING

May 13-14, 2002

WORKGROUP SESSION B

WORKGROUP LEADER

Debbie Ward, R.N., Ph.D.

ADVISORY COMMITTEE PARTICIPANTS

Thomas G. DeWitt, M.D.
Ronald D. Franks, M.D.
Ronald Mito, D.D.S., FDS RCS (Ed)
Carlos A. Moreno, M.D., M.S.P.H.
Maxine A. Papadakis, M.D.
Justine Strand, M.P.H., P.A.-C

WORKGROUP CHARGE FROM THE ADVISORY COMMITTEE

Workgroup B will focus on *how to foster the delivery of primary care and public health services through interdisciplinary teams*. Issues to be addressed include the following:

a) What are the advantages of using interdisciplinary teams?

b) How can we define the roles of team members from different professional disciplines and integrate their activities?

c) What can be done in training to foster the use of interdisciplinary teams? How can conditions be set up to foster interdisciplinary team approaches among residents, other trainees, and practitioners?

d) How can behavior be changed in this direction through the curriculum or through experience in the practice setting?

e) What barriers must be overcome in discipline-specific schedules and rules, accreditations, structure of insurance reimbursement for services, State and/or Federal regulations, health care organization rules and/or structures, etc.? How should systems be reengineered to accomplish the use of interdisciplinary teams?

f) How can new technologies be applied to foster interdisciplinary collaboration and integration of public health considerations into primary care education, training, and practice?

Summary of Workgroup B—Interdisciplinary Teams for Public Health

The Charge

Following introductions, the group examined and sought to clarify their charge: *how to foster the delivery of primary care and public health services through interdisciplinary teams.* They discussed the idea of the interface between public health and primary care medicine and dentistry as well as the role of bioterrorism at that interface. One group member described bioterrorism as bringing into stark relief the idea that primary care and public health fail to interact. An opportunity now exists to increase linkages between public health and other health care professions. Another member added that Title VII, section 747 can be used to help create a synergy that maximizes both systems and that the group's charge was to make suggestions about how to maximize systems through interdisciplinary means.

Definition of Interdisciplinarity

The group attempted to clarify the role of interdisciplinarity, that is, whether Title VII, section 747 should be looking at interdisciplinary education or at service through interdisciplinary teams. One member noted that the aim of Title VII, section 747 was not only to encourage providers to interface with the public health sector, but to get systems to communicate with one another. Further discussion clarified that "interdisciplinary" in this context means public health and one of the disciplines supported by Title VII, section 747. The group agreed that, to avoid unnecessary constraints that fail to consider local conditions of training programs, thinking in terms of broad interdisciplinarity is best.

Education to Enhance the Interface Between Public Health and Primary Care Medicine and Dentistry

Public Health Training as Part of Continuing Medical Education

The group addressed how Title VII, section 747, with its limited funding, could best enhance the interface between public health and primary care medicine and dentistry. One suggestion was to use continuing medical education (CME) to incorporate public health training. The question was raised as to whether all Title VII, section 747 funding would be dedicated to this issue or whether additional monies would be requested. One member wondered about the feasibility of merging Title VII and Title VIII funding to be used for enhancing this interface.

Need for New Models to Increase Interdisciplinarity and Interface with Public Health

Further clarification of the charge stressed the need to put together systems, not just individuals. For these systems to connect effectively, programs must go beyond the boundaries of their silos, and interdisciplinary teams are one way to connect silos. Programs applying for grants would be expected to incorporate components in their training to obtain the desired outcomes of increased interface of public health and primary care medicine and dentistry. To train a primary care medicine and dentistry workforce to be part of a system working with a public health system requires new models or an extension of already existing models.

Selection of Students Interested in Public Health

One Committee member mentioned his program in which medical students volunteer to serve in rural communities, spending one day per week during their first two years and part of their junior year of clerkship doing a rotation in a community. Students are selected into the program based on their interest in rural medicine and are thus self-motivated. They are already interested in rural medicine.

Need for Experiential Interdisciplinary Public Health Training

A representative from the Public Health Foundation commented on a program in Kentucky in which public health students and medical students volunteered at a Salvation Army clinic that provided free services funded by State money, which was matched by the University. The students were not trained together but were trained in the broader concepts of public health, including leadership. He added that understanding public health helps primary care providers better utilize time because they know what kinds of assistance health departments can provide for their practices. A group member summarized the idea that to improve the health of at-risk populations, public health needs to be involved in primary care medicine and dentistry.

NEED FOR PUBLIC HEALTH EDUCATION FOR DENTAL RESIDENCIES

A dental member of the group noted the void in public health education in dentistry. Although it exists in the pre-doctoral curriculum, two thirds of graduates go directly into practice as opposed to residency training. He mentioned his personal experience of writing grants to attract applicants into residency training for both an Academic Health Center and a community-based center, and the community-based experience had problems attracting applicants. He added that dramatic changes have to occur in dental training for public health to become more central. A mandatory Post Graduate Year-1 (PGY-1) for dental trainees would help, but dentistry resists that requirement.

A group member suggested that perhaps a population-based approach to improving dental health, with both didactic and experiential training, would be feasible or maybe a residency requirement having certain competencies would be appropriate.

BARRIERS TO INTERDISCIPLINARY PUBLIC HEALTH TRAINING IN PRIMARY CARE MEDICAL AND DENTAL EDUCATION

A Committee member mentioned some barriers to interdisciplinary education or approaches within institutions, including discipline-specific schedules, rules, and accreditation requirements. Unless public health training is required, it would be voluntary, which would make it more difficult to incorporate. A group member noted that if competencies were written into a systems training approach, faculty would teach population-based health care methods that could be applied later in practices.

The group leader encouraged the group to arrive at a more complete list of barriers because they would be useful to grant writers. She added an example at the University of Washington in which a group of interdisciplinary professionals from an array of health care disciplines met, but were unable to put together a course for everyone because of a lack of a mutually agreeable time for scheduling a course.

A Committee member mentioned that although technology can deliver the information, getting everyone together in the same room is important for socialization purposes. Another noted that the health information sciences have a Web-based curriculum, so the material is available, but whether the on-line course (without socialization) changes people's thinking is questionable. A physician assistant faculty member agreed, noting that parts of physician assistant training can be accomplished on-line, but the socialization piece is important. Another added that this social interaction of trainees is in fact professional development. One member added that live interaction is part of the "hidden curriculum." Students learn from what they see, not just what they are told, which is a problem with on-line curricula.

NEED FOR UTILITY OF PUBLIC HEALTH INTERDISCIPLINARY PRACTICES FOR TRAINEES

Students need to see an action, which is a problem with interdisciplinary practices. If students fail to see a logical outcome of employability with interdisciplinary practices, teaching it is going to be ineffective. Another member noted that at his institution, medical students attend brown-bag seminars and receive credits for attending them. He suggested that similar strategies could be employed to convey public health information at least to first- and second-year students. If they saw utility in the information, they would attend lectures built around public health.

One member added that these practices work for volunteer students from his program. Students are interested in learning how to go from A to B when they go out into practice. He added that, in general, the hidden curriculum says that the primary care physician works in the office making diagnoses and that someone else does the rest. That model is hard to replace, although some exceptions exist. He mentioned a primary care physician in a rural community with whom some students work. The students were exposed to a tape of a woman who had called about domestic violence, and the primary care physician asked students what they would do as a physician in that situation. This physician stimulates students, although in another training situation, the primary care physicians are not truly connected with the community and the program is disintegrating.

NEED TO REINFORCE DIDACTIC TRAINING

The group leader noted that placing students in practices failing to support the principles they were taught created barriers and fruitlessness. A Committee member noted that the education environment needs to reinforce the principles stressed.

CONFLICT BETWEEN ACCREDITATION EQUIREMENTS AND MANDATED TRAINING

The group leader suggested that to address the barrier of accreditation requirements, connections could be forged with the accrediting agencies to help promote

interprofessional practices. A group member indicated that barriers exist if mandates are potentially impossible to fulfill. For example, training all students with the School of Public Health as opposed to exposing a percentage of students to concepts through lectures and courses is an unrealistic goal. Another example is attempting to mandate interdisciplinary training among different disciplines. Training dental students, physician assistants, or medical students in public health concepts is possible without getting into accreditation issues and other barriers. A potential problem emerges if, to get Title VII monies, programs must mandate something that opposes accreditation requirements.

Need for Core Competencies

The representative of the Public Health Foundation noted that currently in public health, a set of core competencies is being created and will be incorporated into learning objectives so that a basis for credentialing workers is developed. These competencies could be incorporated into learning objectives at a general level for primary care medicine, physician assistant, and dental programs. From his experience, medical students fail to connect public health practice with their own work. The core competencies and desired knowledge outcomes could provide a model.

Following some discussion of the discipline-specific levels of these competencies, one member summed up that, for primary care medical and dental training, models of development are needed. Trainees need to understand and recognize when the public health sector needs to be called, but they do not need to acquire all public health skills.

Need for Experiential Training and Cooperation Among Administrators

One group member described his own experience in a communications course that was designed for trainees in several health professions programs. The first year was not totally successful because students felt that the course was too didactic and lacked a strong experiential component. The second year was more successful because students were able to interact with patients and see the relevance of the course to their own careers. One of the most important factors in the success of this program was the cooperation of the Deans of the three schools involved. Their leadership ensured coordination of schedules for all three schools. In this instance, the patient was the community, different yet similar to an individual in the interactions a practitioner has with it.

Need for Time to Develop Successful Training

Another member mentioned his concern that although peer reviewers for Title VII, section 747 grant applications may expect a certain set of outcomes immediately, curriculum reform and development of successful programs take time. It is extremely difficult to coordinate schedules of trainees from different programs, but it can be done some of the time. The group leader stressed the need for experiential opportunities and perhaps having standardized patients to affirm outcomes.

One member observed that the apparent concern for HRSA was not so much how well students were being trained or what their attitudes, skills, or behaviors are, but whether the programs are successfully graduating people who meet certain criteria. Another member noted that programs too fail to measure skills, attitudes, and behaviors.

Scheduling Barriers for Interdisciplinary Programming

A physician assistant faculty member mentioned her work with a Macy grant in which medical students and physician assistant students worked together. Putting together teams from different programs has to be coordinated according to schedules. If the programs are on block schedules, block learners are put together in one site, and longitudinal learners are placed together at another site. Although interdisciplinary training occurs, certain programs cannot train with other programs.

Process-based and Outcome-based Goals

One member noted that perhaps the interdisciplinary goal should be both process-based and outcomes-based. That is, processes should be in place to lead to desired outcomes, but outcomes need to be measured to determine success.

Need for Faculty to Teach Public Health to Primary Care and Dental Trainees

One group member wondered where programs would find faculty to teach this public health/primary care discipline to medical and dental trainees. He stressed the need for strong faculty role models. Faculty of primary care medical and dental programs are usually trained in academic centers according to specific models, so without someone who can model bridging the disciplines, the training will be ineffective.

Merging Title VII and Title VIII Funding

One group member mentioned the Genetics Interdisciplinary Faculty Team Training (GIFTT), which is an innovative interdisciplinary training program using both Title VII and Title VIII funds, which is rarely done. She suggested the possibility of mandating inter-professional cooperation, whether short courses or summer institutes, to encourage interdisciplinary work.

Need for and Approaches to Faculty Training

Another member added that faculty development programs are also important to help faculty bridge gaps between disciplines. Such programs could be formal ones in which physician, physician assistant, nursing, and dental faculty, as well as faculty from programs such as social work, could be involved. However, these programs must be put together. The kind of program that would prepare the model interdisciplinary public health/primary care/physician assistant/dental faculty would perhaps entail a new specialization in academia, such as might be offered through a fellowship. These fellowships would pertain to populations or problems within populations and might include sociologists or legal specialists as much as biomedical specialists.

One group member questioned the objective of faculty training. He noted the cost of $1.2 million for training three or four fellows over a period of three years and wondered whether faculty training would be focused on training a few who would then bring the information back to programs or whether the idea was more limited to training the masses at the margin.

One member suggested that, instead of concentrating on trainees early in their programs, it might be better to use continuing education to get people who already know their disciplines to work together for public health. Changing curricula is hard, and greater impact may be derived from training people who are truly interested in public health and who are in positions of influence. Strong leaders can lead curricular change.

One member noted that most faculty would want more training in public health principles, although probably not an MPH or Fellowship, and that Title VII funds could be used to help with that faculty development. The group discussed the possibilities for Executive MPH courses and the importance of the scope of training—whether short-term or long-term. One member noted that both could be options and both had value.

The Public Health Foundation representative noted that the public health sector was seeking to get some type of certificate or accreditation and that distance education courses were successful because students can obtain credit yet have to be onsite at the program only a couple of weekends.

One member mentioned that perhaps HRSA and the Centers for Disease Control and Prevention could do some joint faculty development training. However, a barrier was noted: these agencies find it difficult to work together also, so the problem of how to work jointly or interdisciplinarily exists even at government levels, further highlighting the importance of facilitating modeling at the system level.

The Need for Flexible Training Options

The group discussed the idea of keeping options open regarding the length and kinds of training to be developed. One member noted that one month might be sufficient to help gain knowledge of issues, but for the majority, one month is not enough time to make much progress. Opportunities for a two-pronged approach are needed.

Model Programs

Some discussion ensued regarding whether the preventive medicine residency could serve as such a model or whether teaching could occur across disciplines, such as physician assistant faculty teaching physical diagnosis. The group leader mentioned another potential model, a new bioinformatics program, which, among other things, has trainees from different disciplines using data sets for different multidisciplinary uses. She observed the need for better systems information to capture more detailed information, including interventions by providers other than physicians. Such systems are important for determining the true cost of care as opposed to what gets billed to the physician.

The Public Health Foundation representative stated that the discipline of public health practice seems to summarize the kind of program that covers health disparities, biostatistics and informatics, management, leadership, and other issues pertinent to communities. He stressed the importance of being sure to include the public health community in whatever model is used to avoid recycling traditional primary care services.

Another Committee member noted the Robert Wood Johnson Foundation model, which, over a period of about ten years, provided a well trained group

of leaders who became deans, department chairs, and other influential leaders who are making an impact. A similar model in the primary care/public health mode could have a similar long-term impact.

A Committee member noted that, given the barriers, the reality is that Title VII would have to be the mechanism to redefine programs so that some movement would occur towards finding ways to facilitate interdisciplinary efforts to bring more public health practices into primary care medical and dental services. Models of programs exist, and the objective of bringing more public health, more sociology, more legal aspects into training fits into the Title VII, section 747 venue.

More Interdisciplinarity Among Title VII, Section 747 Disciplines

A member noted that she would like to see more interface among the various Title VII disciplines—physicians, physician assistants, and dentists. Thus far, these programs are not working together, but this objective also fits into Title VII, section 747.

Request for New Title VII, Section 747 Funding for Public Health Competency Development

A Committee member suggested that perhaps a separate pool of funding is needed for a new public health emphasis in primary care medicine and dentistry training programs. The group discussed the prospects of having programs currently funded replaced by this new emphasis, resulting in no funding gain. They advocated requesting new funding for new program development and emphasized that faculty development would be a good investment of resources because faculty members influence many students. That influence fans out over time as students move into practice.

Building a Public Health Infrastructure

The group stressed that funding derived to support bioterrorism was really dual-purpose money: building a public health infrastructure is important and worth attaining.

APPENDIX D: WORKGROUP C – ACUTE AND CHRONIC PUBLIC HEALTH ISSUES

WORKGROUP MISSION

Explore training strategies that will be required to develop a primary care workforce that can effectively address acute and chronic public health issues

ADVISORY COMMITTEE ON TRAINING IN PRIMARY CARE MEDICINE & DENTISTRY MEETING

May 13-14, 2002

WORKGROUP SESSION C

WORKGROUP LEADER

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

ADVISORY COMMITTEE PARTICIPANTS

J. Thomas Cross, Jr., M.D., M.P.H.
Valerie E. Stone, M.D., M.P.H.
John J. Frey III, M.D.
Terrence E. Steyer, M.D.
Frank A. Catalanotto, D.M.D.
Julia Flanagan, M.P.H., P.A.-C
Denise Rodgers, M.D.

WORKGROUP CHARGE FROM THE ADVISORY COMMITTEE

Workgroup C will focus on *training strategies that will be required to develop a primary care workforce that can effectively address acute and chronic public health issues*. Issues to be addressed include the following:

a) How should primary care trainees be educated to bring public health awareness into primary care private practice systems?

b) How should primary care providers be trained to recognize, report, care for, and communicate about key events in their patients that affect public health (e.g., recognition of potential cases involving bioterrorism)?

c) How can primary care training help to bring public health considerations and interdisciplinary collaboration into private practice systems?

d) How can barriers be overcome to effective communication and acquiring essential public health data (e.g., data considered proprietary by health insurers and/or health care organizations) to facilitate critical epidemiology investigations?

e) How can primary care education foster collaboration by practicing clinicians in gathering critical public health information?

f) How can new technologies be applied to foster integration of public health considerations into primary care and disseminate critical information between the public health infrastructure and primary care providers?

Summary of Workgroup C – Acute and Chronic Public Health Issues

The Charge

The group began by examining their charge, which focused on *training strategies that will be required to develop a primary care workforce that can effectively address acute and chronic public health issues*. Specifically, the group discussed the definitions of acute and chronic public health issues and the learners involved in needed training.

Overlap of Public Health and Chronic Disease Management

One Committee member noted that the proportion of the workload of primary care providers has increasingly been devoted to chronic disease problems. He wondered how the training of primary care providers should relate to the public health community, especially because of the overlap of public health and chronic disease. The group leader suggested that health department practices are variable, but her health department is involved in defining parts of training, especially around chronic disease management and surveillance. She stressed the need for the group to define a chronic public health issue. She asked, if a practitioner has a community full of diabetics, would approaches be different than those used in the office?

One member suggested that the group's charge was to determine ways that training could enable primary care physicians and dentists to be better equipped to address chronic diseases such as diabetes, hypertension, HIV/AIDS, and asthma within communities and populations. Another indicated that the role of public health departments is preventive, especially before someone is diagnosed with a chronic disease.

Connections between Dentistry and Chronic Disease and Public Health

A dental member of the group mentioned that for dentistry, the issues seem to be provision of care for diseases known to be chronic, such as dental caries and periodontal disease. He noted the growth of literature about the relationship between periodontal disease and low-weight premature babies. Studies are illustrating those connections, and he cited a dental project addressing rural migrant workers in a Florida county that has a high prevalence of low birthweight/pre-term babies and no dental care. This project is a public health program having cost savings.

Importance of Provider Roles in Community Interventions

To illustrate providers' lack of public health training, a Committee member noted an example of a Detroit physician who was asked by the media what strategy she would be using to address the disproportionate number of obese people in Detroit. This physician was stymied and believed she had not been trained to address such problems.

The group leader noted the Air Force as an example of bringing together a group of professionals to address high rates of suicide in this branch of the Armed Forces. Instead of leaving it to physicians to treat depression, the Air Force addressed the problem as a community problem. Air Force personnel are now trained to recognize depression, and commanding officers are responsible for recognizing and ensuring treatment for psychosocial stress. This community intervention around a chronic problem has led to the Air Force's having the lowest suicide rates of any of the Armed Services. Similarly, the Air Force has designed interventions such as physical fitness for family members of enlisted personnel and thus has taken a community approach rather than just treating individuals.

Another example of community-level intervention in chronic disease is North Carolina's Project Reach, in which exercise programs and walking groups are organized and also reinforced through social support. This intervention is linked back to primary care providers. Such community interventions, public health involvement, and construction of disease registries require a change in health policy.

Public Health Training in Primary Care Medicine and Dentistry

The group decided that their charge included students, residents, and faculty as trainees or learners. Discussion also evolved around whether community physicians should be included in training, especially for advancing public health agendas. The group leader noted that continuing public health education and continuing medical education were opportunities to change the system to make public health more effective. She stressed the need for alterations in the practice environment and for incentives if public health considerations were to take more precedence.

Incentives for Public Health Training

The group considered whether certification could provide incentives for developing competencies and what role accreditation could play in encouraging organizational competencies. One member noted that requiring a public health module for certification by boards would be one way to ensure training in this area. The difficulty might lie in convincing the boards that such a requirement would be beneficial. Similarly, if residents were required to have public health knowledge to pass boards, faculty would teach public health. Incentives are needed to ensure that public health knowledge in primary care medical and dental training is broadly disseminated. A dental member agreed, adding that convincing chairs, program directors, and other faculty that public health should be incorporated would be easier if the Dental Association required it. Another added that, even at the pre-resident level, some requirements were in place, but not enough to change behavior.

One member noted that he had just been recertified, and no knowledge of public health or knowledge of improved service to the community was expected. Requirements for board certification would at least ensure education, if not changes in behavior. A physician assistant (PA) representative suggested that public health education could be incorporated into continuing medical education (CME) credits. PA training requires a certain number of credits in different subject areas, so public health could be included. CME would be a means of reaching those already practicing.

Role of Bioterrorism in Public Health Training

Some discussion ensued regarding the importance of bioterrorism as a priority for funding, and concern was expressed that perhaps the health care community is chasing the latest fad as opposed to trying to address more long-term problems, such as lung cancer. The group leader pointed out that to prepare for a response to bioterrorism, an infrastructure has to be built, and systems need to change. That infrastructure and systems reform can be used to meet primary care needs and public health problems.

One member noted that funding might not be devoted to primary care, but rather to something like technology, drug companies, or detection systems. The negative side to approaching public health needs through bioterrorism is the risk that the money addresses that threat to the detriment of support for programs addressing other critical public health problems, such as hypertension screening.

Variable Public Health Priorities and Programs Across States

Noted one member, States approach public health issues differently and have different priorities. The group leader noted that those differences were especially true for bioterrorism. Each State has its own surveillance system, and States do not necessarily communicate with one another. Even immunization registries are limited because of the failure of States to exchange information. One member suggested that a key competency should be practitioners' knowledge of how to access information about their State public health systems.

The group further discussed the lack of coordination of local and State public health systems, which tend to be idiosyncratic. A challenge for health care professionals is to learn how to work with and integrate all the different systems because city, county, and State health departments often fail to communicate even in one locale. One member noted the need for primary care providers to assess, not only their communities, but also their public health departments.

Training for Community-Based and Population-Based Health Care

HIV/AIDS

One group member wondered what training is needed to help trainees affect behaviors of a culture, population, or community, not just individuals. The group leader noted the failure of the public health system to address communities in which large numbers of people did not know their HIV status. Some discussion evolved pertaining to who has responsibility for HIV/AIDS community services and education. One member noted

that non-profit organizations provide most HIV/AIDS community-based education and services. Another stated that, although early in the AIDS crisis, agencies had great impact, particularly in the gay communities, young men now appear to be taking more risks and assuming that the crisis is over. Another noted that in Louisiana, a problem was emerging with a different population—young adolescent women, many of whom are screened for HIV because they are pregnant. They are unaware of their status and risk and may not receive HIV education because many are no longer in school.

Need for Training in Reportable Diseases

The group discussed what should be taught regarding reporting of reportable diseases. Currently, noted one member, her institution does not stress reporting to residents because a nursing surveillance system exists, and the physician merely signs the report.

Need to Know When Public Health Should be Called

Another issue of discussion was the notion of when to get public health involved and what needs to be taught and modeled regarding interface with health departments. The group leader noted providers' need to know when and how to contact the health department—where the threshold is for concern before calling in assistance regarding a possible epidemic or outbreak.

Need for Automated Reporting Systems

The group stressed that trainees need to know mechanisms for reporting reportable diseases. The group members recognized a need for automated reporting as much as possible. An information technology system needs to be able to pick up culture results, report reportable illnesses, and keep practitioners apprised of what is being reported. These information systems should be able to maintain surveillance of syndromic incidents because providers may not readily pick those up. Nevertheless, educating residents about reporting diseases increases their awareness of reporting issues.

Communication between Public Health and Primary Care/Dental Professions

The group discussed the need for mutual communication between public health and primary care and dental providers and stressed that public health needs to keep practices informed regarding outbreaks in their communities. A lack of coordination and a lack of defined responsibilities make it difficult to know who should take the lead during outbreaks. Equally important, public health systems need to provide feedback to providers regarding reports of diseases. A Centers for Disease Control and Prevention (CDC) representative noted that she is working on an agreement between the CDC and the Association of American Medical Colleges that will help promote understanding between public health and clinicians.

Tracking Reporting Outcomes for Providers

The group leader noted a need for better tracking of outcomes of practitioners, not just short term, but also long term. Do those clinicians who receive an MPH do anything differently in their practices? Reporting rates are not good, even for managed care systems having information technology in place. When human beings must report, reporting falls apart because practitioners get so busy. The group considered the implications of these reporting problems for education and for practice.

Cultures of Public Health and Primary Care Medicine and Dentistry

One member also noted the cultural differences between public health and clinical medicine and dentistry and suggested that public health training must come from those who have a personal understanding of it. How these two cultures can come to understand one another is analogous to how one becomes culturally competent in any culture not one's own. However, one member noted, medical or dental training already contains so much content for students to learn to enable them to become competent clinicians that changing pace and learning about communities will be difficult. The challenge is to begin, just as it was in teaching communication skills. The goal is to work around constraints so that a perfect model can eventually be achieved.

The CDC representative noted that these problems entail two different issues: the different cultures involved and the content that trainees need to learn. What do students and residents need to learn to enhance their knowledge and skills and to affect their attitude about a different professional or social culture? She observed that even professional gender gaps exist and indicate a need for cultural competencies across genders. Further, she asked, what do public health practitioners need to know to understand clinicians, and what do clinicians need to know to understand the

role of public health departments? Training should address two issues: teaching how these systems can work together and teaching how to address a topic as a shared responsibility.

One group member noted his view that public health and primary care practitioners are not as far apart philosophically as one might think, but that specialists are more prone to be isolated from the public health community. A dental member of the group noted that dentistry has issues of failed understanding between dentistry and public health. He described a meeting in which his college was to establish a community-based clinic in Pensacola because of a large indigent population that had not seen a dentist in three years. The Dental Society was unaware of the data and the problem in the community.

Addressing Acute and Chronic Conditions in Primary Care Medicine and Dentistry

The group discussed acute and chronic disease crises. One member noted that physicians are trained neither to think in terms of community health nor to think about bioterrorism as a source of illness. The concern was expressed that providers need to consider the possibility of bioterrorism as a source of illness without making it too much of a cause for suspicion. The group compiled the following examples of acute and chronic conditions:

Acute Conditions	Chronic Conditions
HIV/AIDS	Hypertension
TB	TB
STDs	Obesity
Suicide	Asthma
West Nile Virus	Oral Health
Violence	Cancer
Emerging Infections	Cardiovascular Disease
Bioterrorism	Substance Abuse
Injury	Diabetes
Meningitis	Low Birthweight
Other Infectious Diseases	Smoking

One member suggested that acute conditions were easier to teach than chronic ones because students can be actively involved in the reporting of sexually transmitted diseases or tuberculosis. Engaging students in learning about chronic conditions such as hypertension or obesity, however, is more difficult. The group discussed whether competencies for addressing these conditions should be specific or general, and the general consensus was that content knowledge should be specific but prevention and recognition of problems should be general because each community is unique. As the group discussed what information providers need to be taught to address these conditions, the group leader stressed that public health similarly should be examining what professionals should be taught in relation to primary care medicine and dentistry.

The group agreed that providers need to know about epidemics, resistance patterns, the general epidemiology of diseases in their communities, and the prospects of changes in that epidemiology—for example, the way HIV evolves in various populations. They need to know how to access that information and also to know to access it.

Need for Updates from Public Health Surveillance

Discussion arose concerning the need for providers to stay up to date and aware of new illnesses and outbreaks in their communities, which necessitates updates from public health surveillance. The group noted that the public health department should automatically send updates. Just as providers are required to report information for public health surveillance, public health should be required to send reports of that data to providers. States should make it easy for providers to know the epidemiology of communities in real time and should perhaps supply a disk with software needed to format providers' computers to receive disease report updates. The group leader noted too that not only providers should be informed, but also the public, perhaps through a weekly newspaper column.

Needed Competencies

The group discussed desired competencies for learners, including knowledge of reportable diseases and recognition of diseases, including anthrax. How does one teach or learn how to have the right amount of suspicion without going overboard? Further, not just trainees, but also providers need to review this knowledge periodically to stay up to date on public health

information. Besides knowledge of infectious diseases, there needs to be knowledge of how to recognize and properly refer patients who are victims of violence and suicide attempts. With these conditions, the need to interface with other community agencies, such as law enforcement or battered women's shelters, is important. Learners need to know how to access community-specific information and national standards. Further, certain competencies exist that all learners nationwide should have.

Need for Internal and External Systems in Practices

The idea that practices also need internal information about their epidemiology was also discussed. Practices are essentially systems within systems. This discussion evolved to the general competency of communication with peers, professionals, and patients. Further, the role of systems is critical to successful primary care and dentistry, and these systems are put in place through collaboration. Any education efforts to develop public health competencies in providers are limited without assurance that other parts of the interface are in place.

Chronic Disease Management

A group member noted that treatment of chronic diseases at present is based on a newer model than that used in the recent past. The group leader suggested that chronic disease competencies are really chronic disease management—determining a continuum of care that goes beyond the 15 minutes the patient spends in the provider's office—and that providers need to be aware of the stages of change that patients may go through so that providers can determine what incentives are needed to manage a patient's chronic illness. Providers need to know what they can provide patients in their offices versus what community resources can provide. Treating chronic diseases entails an ongoing relationship with patients, unlike acute illnesses.

One group member wondered how one delineates a public health function versus chronic disease management and noted that funding often determines responsibilities. For the purposes of Title VII, section 747 funding, trainees should learn how to find out what their community is doing and what resources are available. Further, trainees need to have information about their practices. As health care is becoming a buyer's market, it is even more important for practices to have that information.

A Reformed Learning Environment Produces A Reformed Practice Environment

The group discussed the idea that if the learning environment were changed to reflect certain competencies and expectations, then the practice environment also would change because a new kind of provider would appear. However, knowing how to teach these competencies is difficult, and outcomes are hard to measure.

The group noted the importance of information technology to profile patients and to provide evidence of outcomes. They also discussed issues of practice guidelines, public health goals, especially for acute illnesses, and leading health indicators for chronic illnesses. They noted differences in consequences. If providers fail to meet goals, they suffer no consequences as opposed to consequences from not meeting Health Plan Employer Data and Information Set (HEDIS) guidelines.

Community Assessment

Community assessment has not been part of education for providers but needs to be. Community links between public health networks and providers lead to stronger interactions between the networks and providers and also increase awareness of organizations available for referrals of patients. A Health Resources Services Administration (HRSA) representative noted that an essential part of training should be making trainees aware of local and culturally related health care needs, providers' role in the process of improving community health, and their partnership with public health. One way such training has occurred in the past has been through model programs in particular geographic areas or among specific populations.

Need for Assurance of Effective Health Systems

The group leader suggested that perhaps a health system check was needed to ensure that systems are in place. Realistically, a provider is unable to provide the best care to patients without being able to connect them to outside resources. But having systems in place has to be a process improvement system, not merely motivated by ineffective penalties.

The Public Health-Oriented Provider

As the group attempted to summarize proficiencies desired by trainees, that is, what kind of provider they

wanted to produce, the PA representative summarized the notion of "a provider knowledgeable about the health issues of his or her community, who is in constant communication or pretty regular communication with other providers and with the public health system." Further, this group stressed that to ensure that the training would be effective and useful in practice, providers need to demand that their practice settings support them to do the kinds of community activities needed.

Core Competencies in Public Health

The group discussed the body of knowledge that should comprise public health training for primary care practitioners and dentists. Practitioners would be more inclined to use public health interventions if they have such a core body of knowledge. The consensus among the group members was that any training or education must be required and incorporated into the curriculum, and the curriculum must stay current. Further, as the group leader stated, to teach residents and students effectively, the learning environment and clinical environment must also practice what is taught.

One member suggested developing the needed competencies and then figuring out the training needed to arrive at those competencies. Another key point was that the competencies need to be part of lifelong learning and lifelong practice and should be skills, not just knowledge.

After much discussion, the group compiled the following list of core competencies needed to address acute and chronic public health issues effectively:

- Staying up to date and remaining ready
- Understanding the epidemiology of one's community and practice in real time
- Recognizing patterns of illnesses and understanding which agencies and individuals to seek for answers
- Knowing and applying preventive strategies
- Understanding health behavior and change
- Comprehending and utilizing new preventive management guidelines
- Understanding quality guidelines (i.e., HEDIS)
- Understanding group practice skills leading to effective group and team functioning
- Acquiring informatics skills for access and use of information technology (e.g., World Wide Web, practice data, Palm-held Digital Assistants, and other handheld technologies)
- Understanding the dimensions and functions of one's local public health system
- Acquiring public communication skills and leadership training

Training Methods

The group believed that educational methods should be both classroom-based and experiential or applied:

Classroom-Based Training

- Faculty development in public health issues for core and community-based faculty
- Review of reportable illnesses using case-based examples
- Clinical knowledge
- Knowledge of reportable behaviors
- Review of local epidemiology of both acute and chronic health problems
- Review of national epidemiology, including *Healthy People 2010,* highlighting local comparisons with national data and objectives
- History of new diseases, such as those resulting from HIV and West Nile Virus, to convey recognition of sentinel events and new clusters
- Knowledge of the public health infrastructure, State and local public health departments, and safety net resources

Experiential Training Methods

- Field trips to public health departments to reinforce an overview of public health and its infrastructure
- Case-based discussions focusing on key problems in primary care practice
- Creation of practice-based registries for both acute and chronic public health problems
- Obtaining input from content experts
- Organizational case-based discussions focusing on organizational changes, public health leadership

development, and awareness of cost-effectiveness using simulation modules

- Experiences in public health settings for practica
- Site visits for water treatment, food safety inspections, mosquito control, contact tracing, home visits with public health nurses, and community-based settings, including safety net providers
- Development of useful information technology supports and reinforcement of use of information technology resources
- Participation in satellite broadcasts about public health problems

Recommendations

1. A process for deciding appropriate goals/outcome measures for Title VII, section 747 needs to be determined.
2. Funding should be designated to find and disseminate existing curricula in public health/primary care.
3. Appropriate means should be found to merge public health programming funding (CDC/HRSA funding) with Title VII, section 747 funds to promote interdisciplinary programs.
4. Programs receiving Title VII, section 747 funding should incorporate public health training into faculty development, including core faculty and community preceptors.
5. Both classroom and experiential teaching modules in the area of public health should be developed and disseminated.
6. Successful information technology modules for public health training should be developed and disseminated.
7. A clearinghouse for successful public health educational programs should be formed.
8. Reinforcing policies should be developed to insure up-to-date public health training (e.g. licensure; accreditation; CME requirements; and requirements for the Residency Review Commission, Liaison Committee on Medical Education, and Advanced Cardiac Life Support).
9. Public health training for all primary care medical and dental residencies and physician assistant programs receiving Title VII, section 747 funding should be required.