Statement of the
American Association for Dental Research (AADR)
and the American Dental Education Association (ADEA)

Before the
House Appropriations Subcommittee on
Labor, Health and Human Services, Education, and Related Agencies

Presented by
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Imagine – diagnosing systemic disease from saliva instead of blood samples. Imagine - repairing natural form and function to faces destroyed by disease, accident, or war injuries. These and many other exciting advances from dental researchers are emerging realities. Dental researchers study disorders that affect the head, neck, mouth, teeth and bone structures, and related systemic disease. Dental research in large part takes place in academic dental institutions where the future oral health workforce receives education and training and provides oral health care that improves the health of the public. Dental research and education is the underpinning of the profession; it enhances the quality of the nation's oral and overall health. This testimony will cover the following programs and issues:

1. Oral Health Research – The National Institutes of Health (NIH) and the National Institute of Dental and Craniofacial Research (NIDCR)
    a. Saliva as a Diagnostic Tool
    b. Elimination of America's most prevalent infectious disease
    c. Emerging Possibilities from Dental Researchers
2. Dental Education – Title VII Dental Residency and Diversity and Student Assistance Programs
3. Access to Dental Care – Ryan White CARE Act: Dental Reimbursement and Community-based Partnerships Programs, Dental Health Improvement Act, and Centers for Disease Control and Prevention, Division of Oral Health

Introduction

Mr. Chairman and members of the Committee, I am Dianne Rekow, Chair of the Department of Basic Sciences and Craniofacial Biology, and the Director of Translational Research at the New York University College of Dentistry. I am the President of the American Association for Dental Research (AADR) and I am testifying on behalf of AADR and the American Dental Education Association (ADEA). I am a former advisory council member to the National Institute of Dental and Craniofacial Research (NIDCR), a former panel member to the FDA Dental Products and Radiological Devices Panel, a member of the AADR/ADEA National Oral Health Advocacy Committee, and an orthodontist.

The AADR represents over 5,000 individual members and 100 institutional members within the United States, and ADEA represents over 120 academic dental institutions as well as all of the educators, researchers, residents and students training at these institutions. The joint mission of AADR and ADEA is to enhance the quality and scope of oral health, advance research and increase knowledge for the improvement of oral health, and increase opportunities for scientific innovation. Academic dental institutions play an essential role in conducting research and educating and training the future oral health workforce. Academic dental institutions provide dental care to underserved low-income populations, including individuals covered by Medicaid and the State Children's Health Insurance Program.

I thank the committee for this opportunity to testify about the exciting advances in oral health sciences. There are extraordinary opportunities being created through oral health research and education. I would like to discuss our FY 2007 budget recommendations for the National Institute of Dental and Craniofacial Research (NIDCR), Title VII Health Professions Education and Training Programs administered by the Health Resources and Services Administration (HRSA), and the Ryan White CARE Act, HIV/AIDS Dental Reimbursement Program and the Community Based Dental Partnership Program.

Oral Health Research

Oral health research has produced tremendous benefits for the health and well being of our nation and the world. Thanks to a commitment in federal biomedical research funding, discoveries stemming from dental research have reduced the burden of oral disease, have led to better oral health for tens of millions of Americans, and documented the important relationship between oral and systemic health. Nonetheless, much remains to be done as identified in the Surgeon General's Report of 2000—*Oral Health in America*[1] and by the current Surgeon General in his 2003 *National Call to Action to Promote Oral Health*[2].

Saliva as a Diagnostic Tool

Imagine diagnosing systemic disease from saliva instead of blood samples! Saliva, a protective fluid of the oral cavity, combats bacteria and viruses that enter the mouth and serves as a first line of defense in oral and systemic diseases. More importantly, saliva is also a mirror of the body, containing many compounds indicating a person's overall health and disease status and,

[1] *Oral Health in America: A Report of the Surgeon General*, U.S. Department of Health and Human Services, 2000.
[2] *National Call to Action to Promote Oral Health,* U.S. Department of Health and Humans Services, 2003.

like blood or urine, its composition may be altered in the presence of disease. Now, after many years of research, saliva is poised to be used as a noninvasive diagnostic fluid for a number of oral and systemic conditions. And further, it has potential as a diagnostic tool to detect exposure to chemical and biological agents.

Researchers have been able to amplify the molecular signals present in saliva, heralding the advent of new diagnostic tests that can reliably confirm the presence of clinical disease and will help clinicians diagnose disease much earlier than is currently possible. For example, oral cancers and cancer of the larynx are diagnosed in 41,000 individuals accounting for 12,500 deaths per year in the U.S. alone. The death rate associated with this cancer is especially high due to delayed diagnosis. Now, scientists funded by NIDCR have taken a major step forward in using saliva to detect oral cancer. Elevated levels of distinct, cancer-associated molecules in saliva can be used to distinguish between healthy people and those with cancer. While no biochemical or genetic diagnostic tests are yet commercially available for oral cancer, according to David Wong, a scientist at the University of California at Los Angeles (UCLA) School of Dentistry, further development will soon lead to commercial diagnostic tests for oral squamous cell carcinoma with the 99+% percent accuracy expected for such tests.

Imagine a not so distant future in which advancements in saliva biology coupled with new methods in nanotechnology, produce portable devices that can diagnose a wide variety of disease conditions within minutes using an oral sample.

Eliminating American's most prevalent infectious disease

America's most prevalent infectious disease is dental decay (caries)! It is five times more common than asthma and seven times more common than hay fever in school children. Americans spend millions of dollars annually in dental caries treatments and tooth restoration. Over the past 50 years, discoveries stemming from dental research have reduced the burden of dental caries (tooth decay) for many Americans. Now, the burden of the disease, in terms of both extent and severity, has shifted dramatically to a subset of our population. About a quarter of the population now accounts for about 80 percent of the disease burden. Dental caries remains a significant problem for vulnerable populations of children and people who are economically disadvantaged, elderly, chronically ill, or institutionalized.

Dental caries is a chronic, infectious disease process that occurs when a relatively high proportion of bacteria within dental plaque begin to damage tooth structure. Most infectious diseases are treated through medications, not surgery. But, it has been difficult to treat caries this way because our existing diagnostic techniques lack the sensitivity to catch it early enough. New strategies for the prevention, diagnosis, cure and repair of dental caries are being studied and developed by scientists funded through the NIDCR. If caries can be diagnosed before irreversible loss of tooth structure occurs, it can be reversed using a variety of approaches that "remineralize" the tooth. In addition to improved diagnostics, some researchers are working to develop a vaccine to prevent tooth decay, while others use new methods to specifically target and kill the decay-causing bacteria.

Looking towards the future - imagine a time when you won't need x-rays to diagnose tooth decay; instead a molecular or electronic probe will do the job. Or imagine teeth being restored to health, not with fillings, but with simple mineral rinses or bioengineering techniques. This is closer to reality than you might envision!

Emerging Exciting Areas in Dental Research

- Tissue engineering**:** tissue engineering holds great potential to repair the ravages of orofacial disease, trauma, war injuries, and birth defects, including bioengineering complete, fully functional replacement teeth.
- Stem cells: Isolating stem cells from the ligament around third molars (wisdom teeth) and from human exfoliated deciduous teeth (baby teeth) holds the distinct possibility that one day—in the near future—we may be able to repair dental and craniofacial defects by growing new tissues.
- System-oral health linkages: There is strong evidence of an association between gum (periodontal) disease and systemic events such as cardiovascular disease, diabetes, and adverse pregnancy outcomes. Continued oral health research will provide insight for the prevention and treatment of these and other systemic conditions with links to oral health.

Education and Training Programs – Title VII Programs, Public Health Service Act

Title VII plays a vital role in preparing a diverse health care workforce and is indispensable for providing health care access to underserved Americans who receive treatment at academic dental institutions (dental schools, hospital-based and non-hospital based residency training programs, allied dental programs, community-based training programs), community health centers, hospitals and other health care settings.

Title VII support is essential to expanding existing or establishing new general dentistry and pediatric dentistry residency programs, which are effective in increasing access to care and enhancing dentists' expertise and clinical experiences to deliver a wide range of oral health services to a broad patient pool, including geriatric, pediatric, medically compromised patients, and special needs patients. Residency training programs increase access to care for Medicaid and SCHIP populations. Currently there are 294 accredited general dentistry programs and 65 accredited pediatric dentistry programs. Without adequate funding for general dentistry and pediatric dentistry training programs it is anticipated that programs will be forced to close, thus access to dental care will worsen.

Academic dental institutions struggle with a growing faculty shortage. Without dental faculty there is no future for the profession. Half of the dental school faculty is age 50 and over. Sadly, just one federal program aims to assist in recruiting and retaining health professions faculty, the Title VII Faculty Loan Repayment Program. This worthy program is threatened by budget difficulties. The Federal government must recognize that more resources are needed to insure that our dental institutions have the faculty needed to teach the next generation of practitioners.

The Title VII Scholarships for Disadvantaged Students, Health Careers Opportunity and the Centers of Excellence Programs assist health professions schools in diversifying their student

pool. The recruitment and retention of minority and disadvantaged students is important in meeting the future health care access needs of an increasing diverse America.

Graduates of Title VII programs enter practice in underserved areas in far greater numbers than health professions graduates overall. These programs enhance public health training in primary care, increase access to health professions training for disadvantaged and underserved minorities and diversify the health workforce. Finally, reports of the Advisory Committee on Training in Primary Care Medicine and Dentistry[3] and the Institute of Medicine[4] underscores the programs' value.

Access to Dental Care

Dental Reimbursement Program and Community-based Dental Partnerships Program

Access to dental care remains a high unmet need for people living with HIV/AIDS that receive care and services via the Ryan White CARE Act. Patients with compromised immune systems are more prone to oral infections like periodontal disease and tooth decay. Providing HIV/AIDS patients with regular diagnostic and preventive oral health care reduces the need for more complex and costly services[5].

Those living with HIV/AIDS may access treatment at academic dental institutions via Part F of the Ryan White CARE Act. Congress recognized the vital role education plays in establishing fundamental knowledge and practical experience in treating immunocompromised patients. Congress also understood that financial factors related to income and insurance coverage often make it difficult for HIV/AIDS patients to access oral health care in other settings or pay out of pocket for this necessary care. This acknowledgement led Congress to a sound public policy decision to establish Part F.

Part F accomplishes a dual mission: it provides oral health care for HIV/AIDS patients at academic dental institutions and community-based settings. Simultaneously it provides hands-on experience in treating this population for dental residents, and predoctoral and dental hygiene students.

Dental Health Improvement Act

The Dental Health Improvement Act was established in 2001 as a federal grant program that requires states to match 40 percent of grant awards. Congress allocated $2 million in initial funding in FY2006, and the first grants will be awarded this year. The state grants address access to oral health services for low-income children, disparities in oral health status, and issues related to dental workforce shortages, maldistribution and infrastructure needs. States can use funding for a variety of initiatives. Among them are student loan forgiveness; incentive programs for dentists participating in public insurance programs; recruitment programs; and other dental related needs identified by states.

[3] Advisory Committee on Training in Primary Care Medicine and Dentistry, November 2002.
[4] "Health Professions Education: A Bridge to Quality," Institute of Medicine report, released April 8, 2003.
[5] Journal of the American Dental Association (133 JADA 1343).

Centers for Disease Control and Prevention (CDC) Division of Oral Health

The Centers for Disease Control and Prevention (CDC) Division of Oral Health assists states in building effective oral health prevention programs and reducing disparities among disadvantaged populations. Funding has been used to expand water fluoridation and dental sealant programs, to target high-risk children; to track disease trends throughout the lifespan; to develop state plans to improve oral health and to form partnerships that maximize oral health resources.

AADR/ADEA FY 2007 Funding Recommendations:

- To sustain a national commitment to research to develop salivary diagnostics, eliminate America's most prevalent infectious disease, and to capitalize on all of the unprecedented scientific opportunities in dental research, we must maintain support for the biomedical research at NIH. AADR/ADEA recommends a FY2007 funding level for NIH of $30.1 billion, including $410 million for NIDCR, to account for a 3.8% increase in the biomedical research and development price index and a 1.5% increase for innovation and opportunities.

- AADR/ADEA urges Congress to restore Title VII to the FY 2005 level of $450.2 million for the full complement of Title VII programs including:
  - $89 million for the primary care medicine and dentistry cluster to assure:
    - $8.5 million for general and pediatric dental residency training
  - $118 million for the diversity and student assistance cluster:
    - $33.6 million for Centers of Excellence
    - $35.6 million for Health Careers Opportunity Program
    - $3 million for the Faculty Loan Repayment Program; and
    - $47.1 million for Scholarships for Disadvantaged Students program

- To insure access to quality dental care from dental practitioners trained to provide care for the HIV/AIDS population, AADR/ADEA recommends FY 2007 funding of $19 million for Part F of the Ryan White CARE Act, the Dental Reimbursement Program and the Community-based Dental Partnerships Program.

- To improve access to dental care to underserved populations, AADR/ADEA recommends FY2007 funding of $5 million for the Dental Health Improvement Act. Improving oral health promises long term reductions in the burden of cost for systemic health.

- AADR/ADEA urges Congress to increase CDC funding by $4 million, with $2 million in FY 2007 and another $2 million in FY 2008. This increase would enable the CDC to fund all the states that have previously expressed both a need and an interest in CDC assistance and would include both those states currently funded and those that have yet to receive this CDC support.